TM 11-5820-401-20

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

RADIO SETS AN/VRC-12 AND AN/VRC-43, -44, -45, -46, -47, -48, AND -49

HEADQUARTERS, DEPARTMENT OF THE ARMY
20 DECEMBER 1961

WARNING

DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT

Be careful when working near or on Antenna AT-912/VRC or the ANT connector of the receiver-transmitter when operating; high radiofrequency voltages are present at these points.

DON'T TAKE CHANCES

700 VOLTS DC AND 115 VOLTS AC EXIST IN RECEIVER-TRANSMITTER, RADIO RT-246/VRC AND RECEIVER-TRANSMITTER, RADIO RT-524/VRC.

TM 11–5820–401–20
*C 2

TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

RADIO SETS AN/VRC–12 AND AN/VRC–43, –44, –45, –46, –47, –48, AND –49

TM 11–5820–401–20
CHANGES No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *24 September 1963*

TM 11–5820–401–20, 20 December 1961, is changed as follows:

Change "F21" to "F11" in the following places (as changed by C 1, 19 April 1963):

Page 4, paragraph 4*a*(1) (*d*), line 4 and figure 2.

Page 24, paragraph 13*d*, chart, step 7, "Corrective measures" column, line 5.

Page 30, paragraph 13*f*, chart, step 7, "Corrective measures" column, line 5.

Change "HEADSET-CHESTSET H–141/GR" to: HEADSET-MICROPHONE H–161/GR" in the following places:

Page 6, figure 4.
Page 7, figure 5.
Page 8, figure 6.
Page 9, figure 7.
Page 10, figure 8.
Page 11, figure 9.
Page 12, figure 10.
Page 13, figure 11.

Add the following notes to the figures indicated below the notes:

NOTES:

1. CONNECT THE H–161/LEAD WITH THE YELLOW BAND TO THE COMMANDER'S OR CREWMEMBER'S BOX CONNECTOR WITH THE YELLOW MARK.
2. IN CERTAIN INSTALLATIONS, HELMET KIT MK–525, MK–526, OR MK–567 IS USED IN PLACE OF THE H–161/GR. THE LEADS ARE CONNECTED IN THE SAME MANNER AS THE H–161/GR.

Page 6, figure 4.
Page 7, figure 5.
Page 8, figure 6.
Page 9, figure 7.
Page 10, figure 8.
Page 11, figure 9.
Page 12, figure 10.
Page 13, figure 11.

Page 2, (as changed by C 1, 19 April 1963), paragraph 1. Delete the designation for subparagraph *a*.

Delete subparagraphs *b* and *c*.

Add paragraphs 1.1 and 1.2 after paragraph 1.

1.1. Index of Publications

Refer to the latest issue of DA Pam 310–4 to determine whether there are new editions, changes, or additional publications pertaining to your equipment. Department of the Army Pamphlet No. 310–4 is an index of current Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders that are avaliable through publication supply channels. The index lists the individual parts (–10, –20, –35P, etc) and the latest changes to and revisions of each equipment publication.

1.2. Comments on Manual

Forward all comments on this publication direct to: Commanding Officer, U. S. Army Electronics Materiel Support Agency: ATTN: SELMS–MP, Fort Monmouth, N. J. DA Form 1598 (Record of Comments on Publications), DA Form 2496 (Disposition Form), or letter may be used.

* This change supersedes C 1, 19 April 1963.

Page 5, paragraph 5. Add after line 6:

Caution: **Be very careful to connect the cable assemblies to the proper receptacles. The headsets in the system may become damaged by connection of the cable assemblies to the improper receptacles on the AM–1780/VRC.**

Page 19. Make the following changes (as changed by C 1, 19 April 1963):

Delete paragraph 11 and substitute:

11. Preventive Maintenance

a. Preventive maintenance is the systematic care, inspection, and servicing of the equipment to maintain it in serviceable condition, prevent breakdowns, and insure maximum operational capability. Preventive maintenance is the responsibility of all echelons concerned with the equipment, and includes the inspection, testing, and repair or replacement of parts, subassemblies, or units that inspection and tests indicate would probably fail before the next scheduled periodic service. Preventive maintenance service and inspection of the radio set at the second echelon level are made at quarterly intervals unless otherwise directed by the commanding officer.

b. Maintenance forms and records to be used and maintained on this equipment are specified in TM 38–750.

Add paragraph 11.1 after paragraph 11.

11.1. Quarterly Maintenance

Quarterly maintenance on the radio set will be scheduled in accordance with the requirements in TM 38–750. All deficiencies or shortcomings will be recorded and those not corrected during the inspection and service will be immediately reported to higher echelon by use of forms and procedures specified in TM 38–750. Perform all the services listed in the quarterly preventive maintenance checks and services chart (par. 11.2) in the sequence listed.

Delete paragraph 11.2 (as changed by C 1, 19 April 1963) and substitute:

11.2. Quarterly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	Completeness	Check to see that the equipment is complete	Appx II, TM 11–5820–401–10.
2	Installation	Check to see that the equipment is properly installed.	Par. 4.
3	Cleanliness	Check to see that the equipment is clean	Par. 49.3, TM 11–5820–401–10.
4	Preservation	Check all surfaces for evidence of fungus. Remove rust and corrosion and spot-paint bare spots.	Par. 21.1 and TM 9–213.
5	Publications	Check to see that all publications are complete, serviceable, and current.	DA Pam 310–4.
6	Modifications	Check DA Pam 310–4 to determine if new applicable MWO's have been published. All urgent MWO's must be applied immediaetly. All routine MWO's must be scheduled.	TM 38–750 and DA Pam 310–4.
7	Gaskets	Check gaskets for moisture, oil saturation, and brittle, broken, cracked, loose, pinched, mismatched, or missing sections.	None.
8	Heat exchanger	Inspect and clean if required	Par. 21.
9	Pluckout items	Check to see that relays and electron tubes are properly seated. Check for loose module holddown screws.	Figs. 22, 23, 26, 27, 29, and 30.
10	Fuses	See that the fuses in the mountings are of the correct value and properly installed.	Par. 4.
11	Mountings	Check to see that all bolts, nuts, and washers, are correctly positioned and properly tightened and that the receiver and receiver-transmitter are properly installed on the mounting.	Par. 4.
12	Connections	Check to be sure that: *a.* Plugs and receptacles are clean, intact, and not loose-fitting.	Par. 5.

Sequence No.	Item	Procedure	References
		b. Audio accessories are properly connected to control boxes.	
13	Knobs, dials, and switches_	While making the operating checks (items 14 through 16), observe that the mechanical action of each knob, dial, and switch is smooth and free of external or internal binding.	None.
14	Receiver, Radio R–442/VRC	Check the R–422/VRC in accordance with the operational checklist.	Par. 13*c*.
15	Receiver - Transmitter, Radio RT–246/VRC.	Check the operation of the RT–246/VRC in accordance with the operational checklist.	Par. 13*d*.
16	Receiver - Transmitter, Radio RT–524/VRC.	Check the operation of the RT–524/VRC in accordance with the operational checklist.	Par. 13*f*.
17	Control boxes _____	Check the operation of the radio set from the various control boxes in accordance with the operational checklist.	Par. 13*h*, *i*, *j*, *k*, and *l*.
18	Spare parts _____	Check all spare parts (operator and organizational) for general condition and method of storage. There should be no evidence of overstock, and all shortages must be on valid requisitions.	Appx II, TM 11–5820–401–10, TM 11–5820–399–20P, TM 11–5820–401–20P, TM 11–5820–402–20P, TM 11–5820–403–20P, TM 11–5820–405–20P, TM 11–5820–406–20P, TM 11–5820–407–20P, TM 11–5820–408–20P, TM 11–5820–409–20P, TM 11–5820–410–20P, TM 11–5820–411–20P, TM 11–5820–412–20P, and TM 11–5820–487–20P.

Pages 20 and 21. Delete figures 17 and 18 (as changed by C 1, 19 April 1963).

Page 24, paragraph 13*d*, chart, step 7, "Action" column (as changed by C 1, 19 April 1963). Delete second sentence and substitute: Remove RT–246/VRC from MT–1029/VRC. Connect a voltmeter between terminal C of connector J22 on MT–1029/VRC junction box and ground. Replace RT–246/VRC on MT–1029/VRC, turn POWER switch to LOW; read voltmeter indication.

Page 30, Paragraph 13*f*, chart, step 7, "Action" column (as changed by C 1, 19 April 1963). Delete second sentence and substitute: Remove RT–524/VRC from MT–1029/VRC. Connect a voltmeter between terminal C of connector J22 on MT–1029/VRC junction box and ground. Replace RT–524/VRC on MT–1029/VRC, turn POWER switch to LOW; read voltmeter indication.

Page 48, paragraph 16. Delete subparagraph *e* and substitute:

e. Assembly A1600 (fig. 25).

(1) Remove assembly A1600 as follows:

(*a*) Loosen the six captive screws and remove the top cover from the R–442/VRC (fig. 23).

(*b*) Loosen the captive screw that holds assembly A3000 and swing it out (fig. 23).

(*c*) Loosen the three captive screws on assembly A5000 (fig. 19), pull up on the handle near the connector on the assembly and remove the assembly to allow room to remove assembly A1600.

(*d*) Loosen the six captive screws and remove the bottom cover of the R–442/VRC.

(*e*) Loosen the two captive screws on assembly A4000 (fig. 12) and swing it out.

(*f*) Unplug the three connections on assembly A1600; unsnap the snap slide. With a small screwdriver, carefully pry assembly A1600 away from assembly A1600 sufficiently to clear the electrical receptacle, and

the end of the switch shaft protruding from assembly A1000. Push assembly A1600 from the bottom of the R–442/VRC and remove it.

(2) Replace assembly A1600 as follows:

(*a*) Position assembly A1600 on assembly A1000, fasten the snap slide, and plug in the three connections on assembly A1000.

(*b*) Release the brace on assembly A4000, lower the assembly into the case, and tighten the captive screws that secure it.

(*c*) Replace the bottom cover and tighten the six captive screws that secure it (fig. 19).

(*d*) Replace assembly A5000 and tighten the three captive screws that secure it (fig. 19).

(*e*) Swing assembly A3000 into place and tighten the captive screw that secures it (fig. 23).

(*f*) Replace the top cover on the R–442/VRC and tighten the six captive screws (fig. 23).

Page 50, paragraph 17. Delete subparagraph *c*(1) (*c*) and substitute:

(*c*) Loosen the four captive screws on filter FL401. Unplug the connector at FL401J1 (fig. 29) by placing the index finger under the connector and carefully prying the connector from FL401J1 with a small screwdriver. Pull out FL401 and unplug the connector at FL401J2 and remove filter FL401.

Page 56, paragraph 17. Delete subparagraph *1* and substitute:

l. Assembly A1600 (figs. 30 and 31).

(1) Remove assembly A1600 as follows:

(*a*) Loosen the 11 captive screws and remove the top cover from the receiver-transmitter (RT–246/VRC, fig. 26; RT–524/VRC, fig. 27).

(*b*) Loosen the captive screw that holds assembly A3000 and swing it out (RT–246/VRC, fig. 26; RT–524/VRC, fig. 27).

(*c*) Loosen the three captive screws on assembly A5000 (RT–246/VRC, fig. 20; RT–524/VRC, fig. 21), pull up on the handle near the connector on assembly A5000, and remove the assembly to allow room to remove assembly A1600.

(*d*) Loosen the 11 captive screws and remove the bottom cover of the receiver-transmitter.

(*e*) Loosen the two captive screws on assembly A4000 (RT–246/VRC, fig. 13; RT–524/VRC, fig. 14) and swing it out.

(*f*) Unplug the three connections on assembly A1000; unsnap the snap slide. With a small screwdriver, carefully pry assembly A1600 away from assembly A1000 sufficiently to clear the electrical receptacle and the end of the switch shaft protruding from assembly A1000. Push assembly A1600 from the bottom of the receiver-transmitter and remove it.

(2) Replace assembly A1600 as follows:

(*a*) Position A1600 on assembly A100, fasten the snap slide, and plug in the three connections on assembly A1000.

(*b*) Release the brace on assembly A4000, lower the assembly into the case, and tighten the captive screws that hold it.

(*c*) Replace the bottom cover and tighten the 11 captive screws.

(*d*) Replace assembly A5000 and tighten the three captive screws that secure it (fig. 24).

(*e*) Swing assembly A3000 into place and tighten the captive screws that secures it (RT–246/VRC, fig. 26; RT–524/VRC, fig. 27).

(*f*) Replace the top cover on the receiver-transmitter and tighten the 11 captive screws.

Page 64. Add paragraph 21.1 after paragraph 21 (as added by C 1, 19 April 1963).

21.1. Cleaning Metal Surfaces

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two coats of paint on the bare metal to protect it from further corrosion. Refer to applicable cleaning and refinishing practices specified in TM 9–213.

Page 68, appendix I. Add the following:

TM 9–213	Painting Instructions for Field Use.
TM 11–5820–399–20P	Organizational Maintenance Repair Parts and Special Tool Lists, Receiver-Transmitter, Radio RT–246/VRC.
TM 11–5820–402–20P	Organizational Maintenance Repair Parts and Special Tool Lists, Antenna AT–912/VRC (Including Mounting MX–2799/VRC).
TM 11–5820–403–20P	Organizational Maintenance Repair Parts and Special Tools List, Mounting MT–1029/VRC.
TM 11–5820–405–20P	Organizational Maintenance Repair Parts and Special Tool Lists, Control, Intercommunication Set C–2296/VRC.
TM 11–5820–406–20P	Organizational Maintenance Repair Parts and Special Tools Lists, Amplifier, Audio Frequency AM–1780/VRC.
TM 11–5820–407–20P	Organizational Maintenance Repair Parts and Special Tool Lists, Control, Frequency Selector C–2742/VRC.
TM 11–5820–408–20P	Organizational Maintenance Repair Parts and Special Tool Lists, Control, Intercommunication Set C–2298/VRC.
TM 11–5820–409–20P	Organizational, Maintenance Repair Parts and Special Tools Lists, Receiver, Radio R–442/VRC.
TM 11–5820–410–20P	Organizational Maintenance Repair Parts and Special Tool Lists, Control, Intercommunication Set C–2297/VRC.
TM 11–5820–411–20P	Organizational Maintenance Repair Parts and Special Tool Lists, Mounting, MT–1898/VRC.
TM 11–5820–412–20P	Organizational Maintenance Repair Parts and Special Tool Lists, Control, Radio Set C–2299/VRC.
TM 11–5820–487–20P	Organizational Maintenance Repair Parts and Special Tool Lists, Receiver-Transmitter, Radio RT–524/VRC.
TM 38–750	The Army Equipment Record System and Procedures.

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

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Sacramento (50)
Ft Worth (10)
Letterkenny (5)
Tobyhanna (5)
Sierra (5)
Sioux (5)
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Army Tml (1)
POE (3)
USAOSA (2)
AMS (1)
AFIP (1)
WRAMC (1)
BAMC (1)
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ESCO (1)
Army Pic Cen (2)
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USARCARIB Sig Agcy (1)
USA Elct Mat Agcy (50)
Chicago Proc Dist (1)
Sig Fld Maint Shops (3)
Edgewood Arsenal (5)
Raritan Arsenal (2)
Picatinny Arsenal (3)
Lab (1)
Dugway PG (5)
USA Elct RD Actv (Ft Huachuca) (5)
USA Elct RD Actv (White Sands) (2)
MAAG (Korea) (20)
USA Corps (3)

NG: State AG (3).

USAR: None.

For explanation of abbreviations used, see AR 320–50.

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TM 11-5820-401-20
C 3

Organizational Maintenance Manual

RADIO SETS AN/VRC-12 AND AN/VRC-43, -44, -45, -46, -47, -48, AND -49

CHANGE No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *15 January 1965*

TM 11-5820-401-20, 20 December 1961, is changed as follows:

Note. The parenthetical reference to a previous change (example: page 1 of C 2) indicates that pertinent material was published in that change.

Page 2. Delete paragraph 1.2 (page 1 of C 2) and substitute:

1.2. Reporting of Equipment Manual Improvements

The direct reporting, by the individual user, of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended Changes to DA Publications) will be used for reporting these improvements. This form will be completed in triplicate using pencil, pen, or typewriter. The original and one copy will be forwarded direct to Commanding General, U.S. Army Electronics Command, ATTN: AMSEL-MR-MA, Fort Monmouth, N.J. 07703. One information copy will be furnished to the individual's immediate supervisor (officer, noncommissioned officer, supervisor, etc.).

Page 4. Make the following changes:

Section II, under heading add the following caution:

Caution: **Do not use the front panel handles to carry the R-442/VRC, RT-246/VRC, or RT-524/VRC.** ***They will break off.*** **When space limitations require the use of these handles for removal purposes,** ***pull gently.***

Paragraph 4*a*(2)(*c*). Next to last line. Change E14 to E13.

Delete figure 2 and substitute new figure 2.

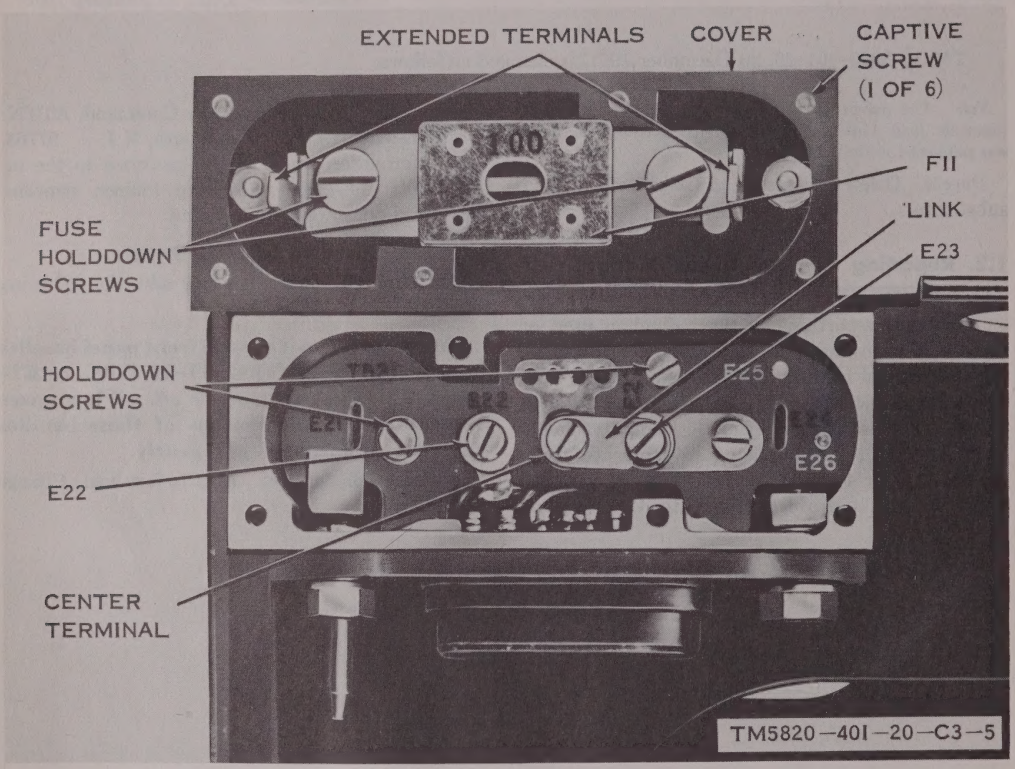

Figure 2. Mounting MT–1029/VRC junction box, cover removed.

Page 5. Delete figure 3 and substitute new figure 3.

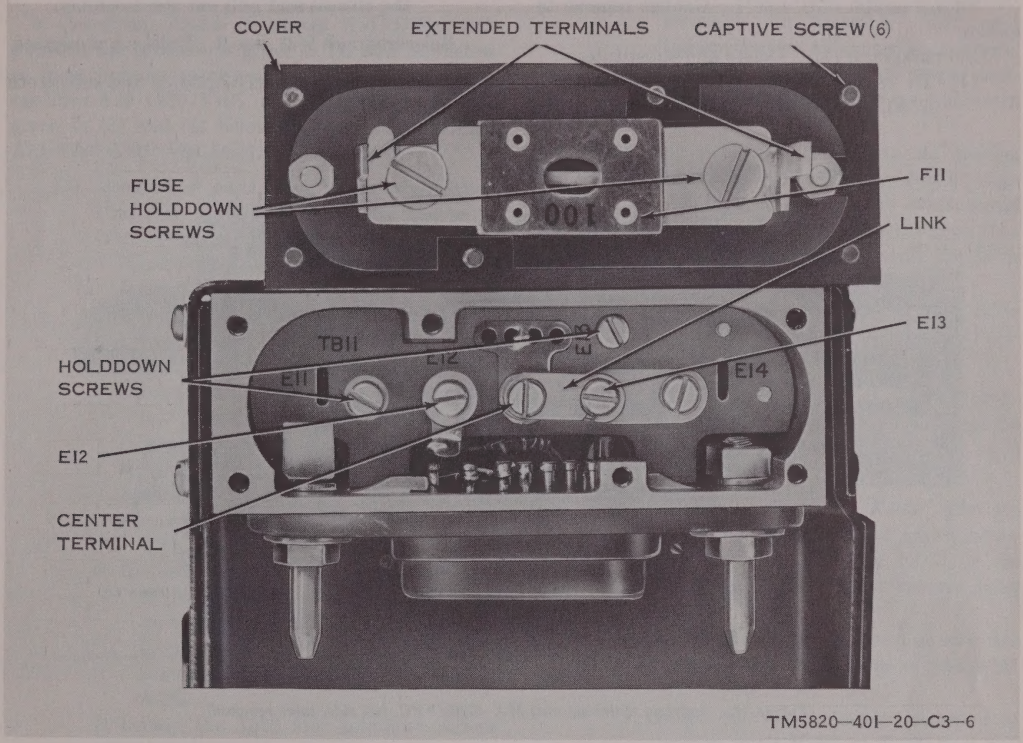

Figure 3. Mounting MT–1898/VRC junction box, cover removed.

Page 22, section II, under heading add the following caution:

Caution:* Do not use the front panel handles to carry the R–442/VRC, RT–246/VRC, or RT–524/VRC. *They will break off.* When space limitations require the use of the handles for removal purposes, *pull gently.

Page 22, paragraph 13*a*. After subparagraph *a*, add:

Note. Before attempting to perform the procedures in *c*, *d*, and *f* below, check the position of the mounting link (para. 4*a*) for the type of power on-off operation desired.

Page 43, paragraph 14, under heading. Delete the note.

Page 45, paragraph 15. Make the following changes:

Delete the note after subparagraph *b*.

Add subparagraph *b*.1 after subparagraph *b*.

b.1. Use Test Set, Radio AN/VRM–1 to test the modules of the R–442/VRC (para. 14, TM 11–6625–496–12) and the RT–246/VRC or RT–524/VRC (para. 15, TM 11–6625–496–12). Where the fault can be sectionalized to only a group of modules, use the module substitution method (*c* below) to locate the defective module.

Add subparagraph *f* after subparagraph *e*.

f. When replacing component covers, apply a light coating of insulating compound to the cover gaskets to prevent moisture infiltration. Use DC4 Compound (FSN 5970–389–7944) for this purpose.

***Caution:* When applying insulating compound, avoid contaminating any electrical contacts or ground points. Damage to the equipment will result.**

Page 60, paragraph 19. Make the following changes:

Subparagraph *a*(3), line 1. Change remove to loosen.

Subparagraph (4). Delete and substitute:

(4) To remove assembly A560, A570, A580, A590, or A600 (fig. 32) or assembly A610, A620, A630, A640, or A650 (fig. 33), pull the two securing rods straight up out of the chassis and pull out the assembly.

Subparagraph *b*(2), line 2. Delete: and replace.

Page 61. Delete figures 32 and 33 and substitute new figures 32 and 33.

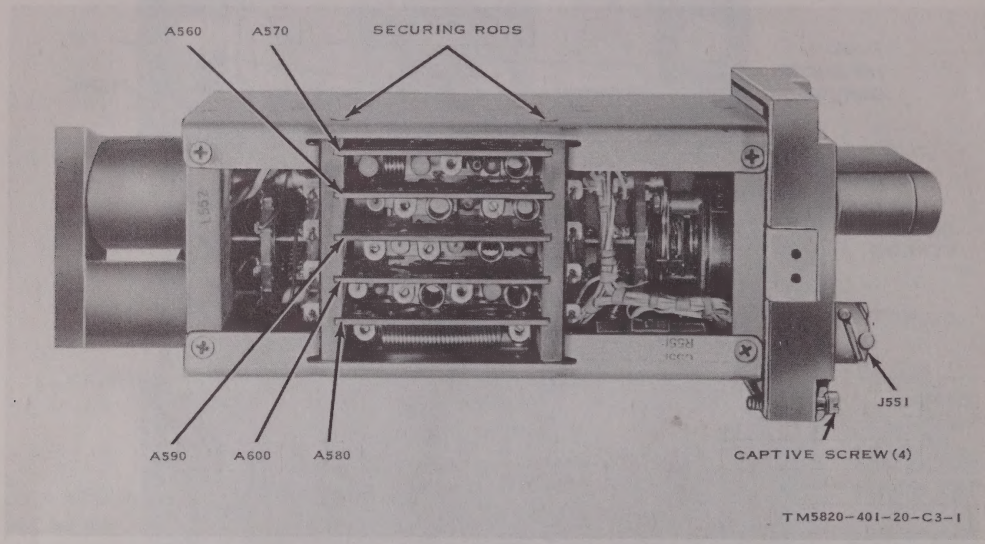

Figure 32. Antenna matching unit MX-2799/VRC, left side, cover removed.

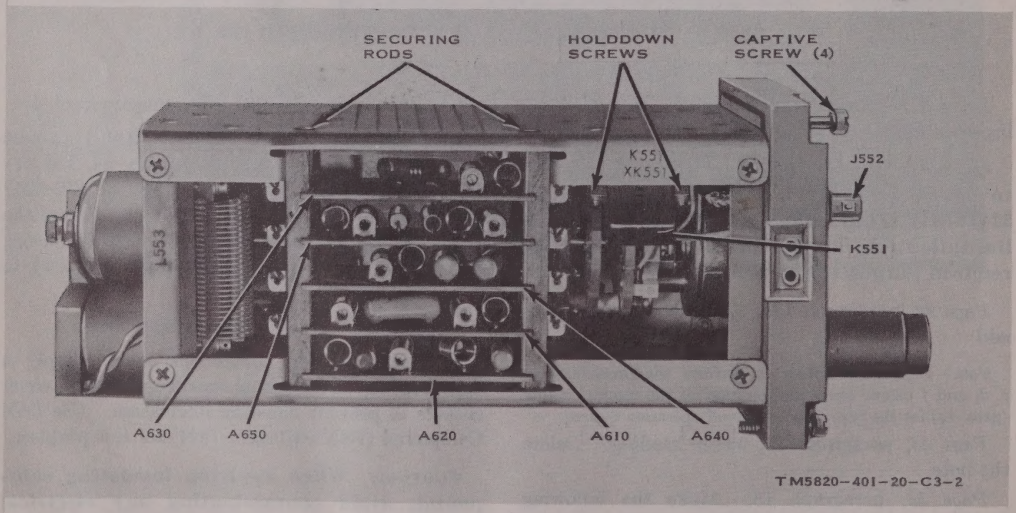

Figure 33. Antenna matching unit MX-2799/VRC, right side, cover removed.

Page 62, paragraph 20. Delete subparagraph *a* and substitute the following:

a. Amplifier, Audio Frequency AM–1780/VRC. Perform the procedures given in (1) and (2) below to remove and replace parts in the manufacturer-modified AM–1780/VRC (fig. 34) or the procedures given in (3) and (4) below for the Army-modified AM–1780/VRC (fig. 34.1).

(1) *Removal of parts from Manufacturer-modified AM–1780/VRC.* Remove the parts from the manufacturer-modified AM–1780/VRC as follows:

(*a*) *Relay K501, K502, or K503.*

1. Loosen the eight holddown screws and remove the back cover of the AM–1780/VRC.

2. Loosen the two relay holddown screws and pull the relay straight up out of its socket.

(*b*) *Assemblies A520 and A250.*

1. Loosen the eight holddown screws and remove the back cover of the AM–1780/VRC.

2. Remove the two holddown screws that secure connector J512 and the filter assembly and pull J512 towards the filter assembly to disengage J512 from its mating terminals on assembly A520.

3. Loosen the A520 four holddown screws and remove the assembly.

4. Loosen the two A250 holddown screws and pull the assembly straight up and off assembly A520.

(2) *Replacement of parts in manufacturer-modified AM–1780/VRC.* Replace the parts of the manufacturer-modified AM–1780/VRC as follows:

(*a*) *Relay K501, K502, or K503.*

Caution: **Relays K501 and K502 are mechanically but not electrically interchangeable. Relay K501 is marked *200 ohms* and relay K502 is marked *250 ohms*. Be sure to insert the relays in their respective sockets.**

1. Align the relay guide pin (large pin) with the relay socket guide hole, plug the relay into its socket, and tighten the two holddown screws.

2. Replace the back cover of the AM–1780/VRC and tighten the eight captive screws.

(*b*) *Assemblies A520 and A250.*

1. Plug assembly A250 into its polarized terminals on assembly A520 and tighten the two A250 holddown screws.

2. Place assembly A520 in its proper position and tighten its four holddown screws.

3. Plug connector J512 into its mating terminals on assembly A520, align the filter assembly, and replace and tighten the two holddown screws that secure connector J512 and the filter assembly.

4. Replace the back cover of the AM–1780/VRC and tighten the eight holddown screws.

(3) *Removal of parts from Army-modified AM–1780/VRC.* Remove the parts from the Army-modified AM–1780/VRC (fig. 34.1) as follows:

(*a*) *Relay K501, K502, or K503.* Perform the procedures given in *1* and *2* below to remove relay K501 or K502, or the procedures in *3* below to remove relay K503.

1. Loosen the eight holddown screws and remove the back cover of the AM–1780/VRC.

2. Loosen the two holddown screws that secure relay K501 or K502 and pull the relay straight up out of its socket.

3. Remove the three holddown screws that secure the filter assembly and pull this assembly aside to gain access to relay K503 (fig. 34). Loosen the two holddown screws that secure relay K503 and pull the relay straight up out of its socket.

(*b*) *Assemblies A520 and A250.*

1. Loosen the eight holddown screws and remove the back cover of the AM–1780/VRC.

2. Loosen the two holddown screws that secure connector J512 and disengage it from its mating terminals on assembly A520.

3. Loosen the two holddown screws of assembly A520.

4. Remove the three holddown screws of the filter assembly and slide assembly A520 out of the AM–1780/VRC.

5. Loosen the two A250 holddown screws (fig. 34) and pull assembly A250 straight up and off assembly A520.

(4) *Replacement of parts in Army-modified AM–1780/VRC.* Replace the parts of the Army-modified AM–1780/VRC (fig. 34.1) as follows:

(*a*) *Relay K501, K502, or K503.*

Caution: **Relays K501 and K502 are mechanically but not electrically interchangeable. Relay K501 is marked *200 ohms* and relay K502 is marked *250 ohms*. Be sure to insert the relays into their respective sockets.**

1. Align the relay guide pin (large pin) with the relay socket guide hole, plug the relay into its socket, and tighten the two relay holddown screws.

2. If relay K503 has been replaced, replace the filter assembly, then replace and tighten the three filter assembly holddown screws.

3. Replace the bottom cover of the AM–1780/VRC and tighten the eight holddown screws.

(*b*) *Assemblies A520 and A250.*

1. The replacement procedure for assembly A250 is identical with that given in (2)(*b*)*1* above.

2. Slide assembly A520 into position with its left-hand edge under the right-hand edge of the filter assembly.

3. Plug connector J512 into its mating terminals on assembly A520. Engage but do not tighten the two J512 holddown screws.

4. Align the filter assembly plate and assembly A520 with the two filter assembly holddown screwholes.

5. Replace and tighten the three filter assembly holddown screws.

6. Tighten the two A520 holddown screws and the two J512 holddown screws.

7. Replace the bottom cover of the AM–1780/VRC and tighten the eight captive screws.

Delete figure 34 and substitute new figure 34.

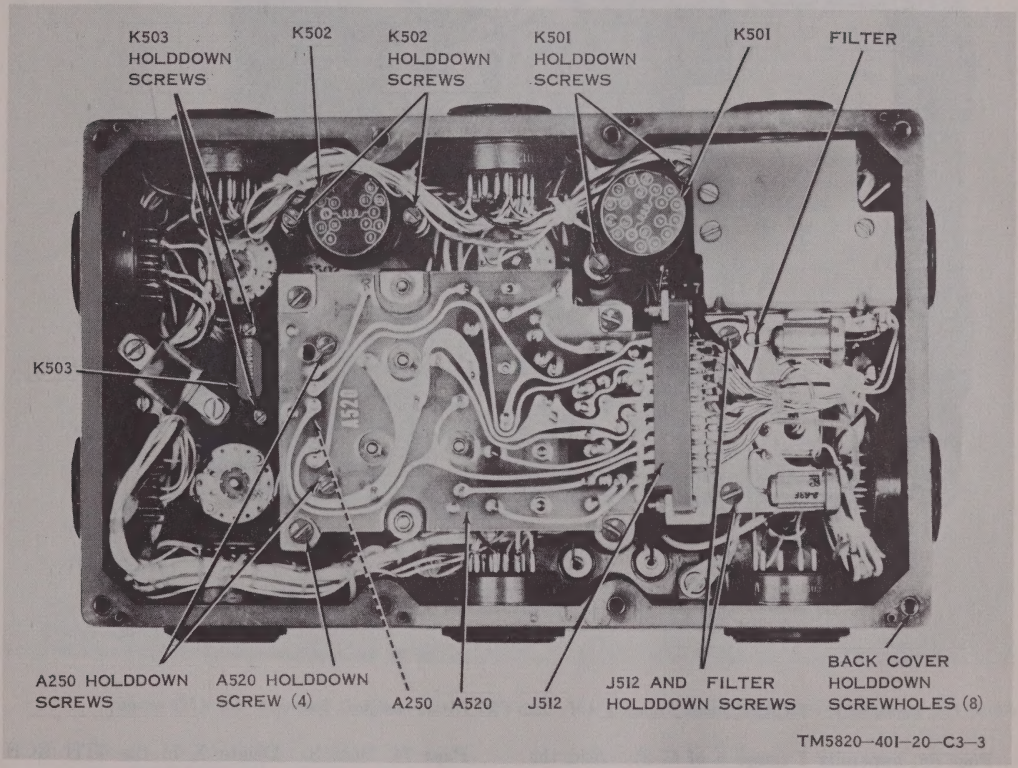

Figure 34. Amplifier, audio frequency AM-1780/VRC (manufacturer-modified), back cover removed.

Add figure 34.1 after figure 34.

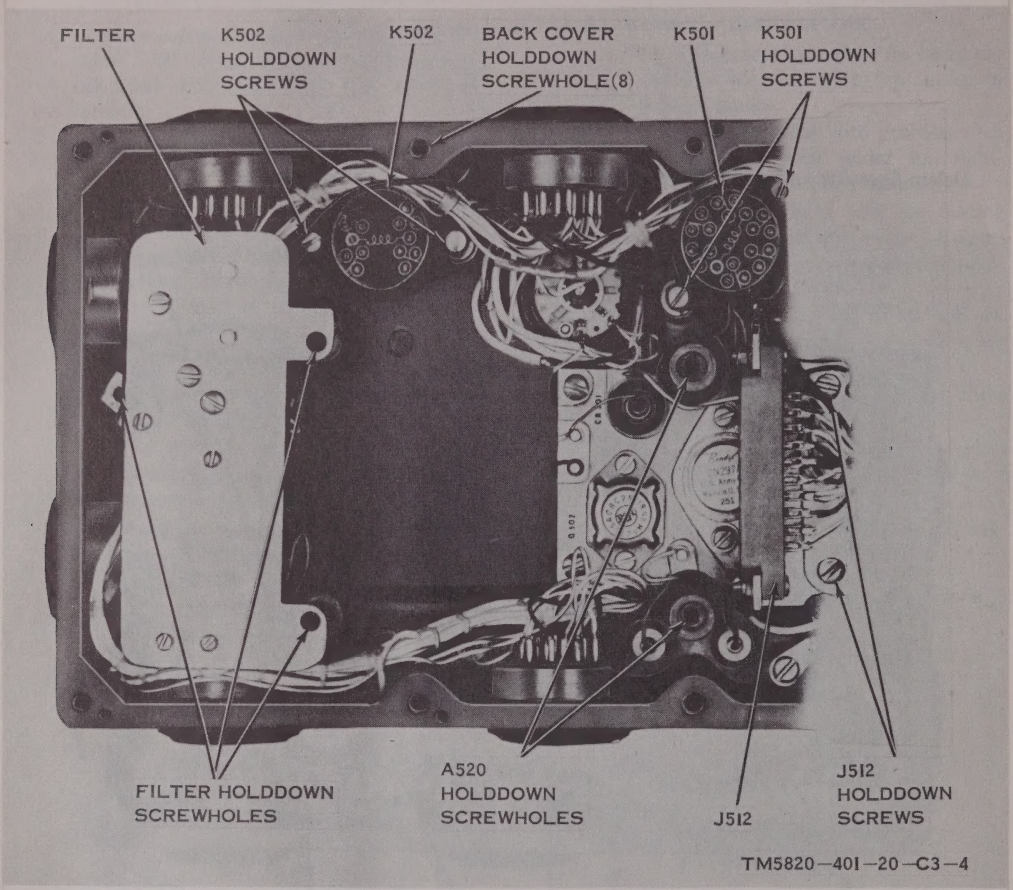

Figure 34.1. Amplifier, audio frequency AM–1780/VRC (Army-modified), back cover and A520 removed.

Page 68, appendix I (page 5 of C 2). Add the following:

TM 11–6625–496–12 — Operator and Organizational Maintenance Manual: Test Set, Radio AN/VRM–1.

Page 71, item 3. Delete X in the 4TH ECH column and insert X in the 3RD ECH column.

By Order of the Secretary of the Army:

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General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

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USACDCCEA (Monmouth Ofc) (1)
USACDCOA (1)
USACDCQMA (1)
USACDCTA (1)
USACDCADA (1)
USACDCARMA (1)
USACDCAVNA (1)
USACDCARTYA (1)
USACDCSWA (1)
USMA (5)
Svc Colleges (2)
Br Svc Sch (2) except
  MFSS, USACMLCS (5)
  USASESCS, USAARMS (40)
  USAAMS, USAIS (40)
USATC AD (2)
USATC Armor (5)
USATC Engr (2)
USATC Inf (2)
USATC FA (5)
USASTC (2)
WRAMC (1)
Army Pic Cen (2)
USASCC (4)
GENDEP (OS) (2)
Sig Sec, GENDEP (5)
Sig Dep (OS) (12)
Instl (2) except
  Ft Monmouth (63)
  Ft Hancock (4)
  Ft Gordon (5)
  Ft Huachuca (10)
WSMR (5)
Army Dep (2) except
  LXAD, TOAD (14)
  SAAD (30)
  FTWOAD (10)
  LEAD, NAAD (5)
  SVAD (5)
  SHAD (3)
  ATAD (4)
  CHAD (3)
USA Tml Comd (1)
Army Tml (1) except
  OART (5)
POE (1)
Sig Fld Maint Shops (2)
AMS (1)
USAERDAA (2)
USAERDAW (13)

NG: State AG (3).
USAR: None.
For explanation of abbreviations used, see AR 320–50.

☆ U.S. Government Printing Office: 1965—750579

Technical Manual
No. 11-5820-401-20

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *20 December 1961*

RADIO SETS AN/VRC-12 AND AN/VRC-43, -44, -45, -46, -47, -48, AND -49

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CHAPTER 1
INSTALLATION

Section I. SERVICE ON RECEIPT OF EQUIPMENT

1. Scope

a. This manual covers installation and maintenance of the radio sets by organizational maintenance personnel. The manual includes disassembly and repackaging instructions for shipment and limited storage of the equipment. The operating instructions for this equipment are contained in TM 11-5820-401-10.

b. Refer to DA Pamphlet 310-4 to determine what changes to or revisions of this publication are current.

c. Forward comments concerning this manual direct to the Commanding Officer, U.S. Army Signal Materiel Support Agency, ATTN: SIGMS-PA2d, Fort Monmouth, N.J.

Note: For applicable forms and records, refer to paragraph 2, TM 11–5820–401–10.

2. Unpacking

a. Packaging Data. When packed for shipment, the components of a radio set are placed in cartons and packed in wooden boxes. A typical shipping box and its contents are shown in figure 1.

b. Removing Contents. Perform all the steps outlined below when unpacking equipment that is packed in wooden boxes (fig. 1). When unpacking equipment in cartons, omit the procedure given in (1), (2), and (3) below.

(1) Cut and fold back the metal straps.

(2) Remove the nails from the top and one side of the box with a nailpuller. Remove the top and one side. Do not attempt to pry them off; the equipment may become damaged.

(3) Open the moistureproof barrier that covers the carton inside the box. Remove the carton.

(4) Open the carton and remove the contents.

(a) If the carton contains a receiver-transmitter, be sure to remove both technical manuals. One technical manual is beneath the padding in the bottom of the carton. Also, be sure to remove and store the spare part (indicator lamp) in the envelope.

(b) If the carton contains Receiver, Radio R-442/VRC, be sure to remove and store the spare indicator lamp in the envelope.

(c) If the carton contains Mounting MT-1029/VRC, it also contains mounting hardware and Cable Assembly, Power, Electrical CX-4720/U.

(d) If the carton contains Mounting MT-1898/VRC, it also contains mounting hardware and Cable Assembly, Power, Electrical CX-4721/U.

3. Checking Unpacked Equipment

a. Inspect the equipment for possible damage incurred during shipment. If the equipment has been damaged, refer to paragraph 2 of TM 11-5820-401-10 for applicable forms and records.

b. See that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against the table of components in paragraph 6 of TM 11-5820-401-10.

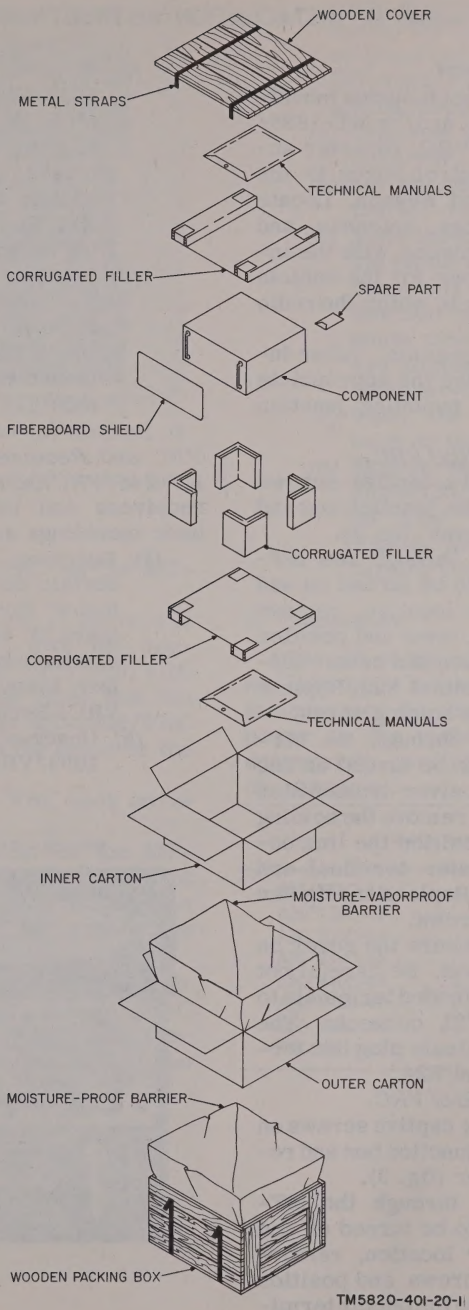

Figure 1. Typical packaging diagram.

4. Installation of Equipment

Installation of a radio set includes mounting of the MT-1029/VRC and/or MT-1898/VRC, Antenna AT-912/VRC, receiver antenna, and system control boxes in the vehicle or crew-served weapon. Locate and mount the mountings, antennas, and control boxes in accordance with the installation kit instructions for the vehicle or crew-served weapon in which the radio set is being installed.

a. Mounting Link Connection. After installing a mounting, make the appropriate link connection in the mounting junction box as follows:

(1) *Mounting MT-1029/VRC.*

(a) Loosen the six captive screws on the top of the junction box and remove the cover (fig. 2).

(b) If power fed through the MT-1029/VRC is to be turned on and off at another location, remove the holding screws and position the link between the center terminal and terminal E22. Replace and tighten the holding screw.

(c) If power fed through the MT-1029/VRC is to be turned on and off at the receiver-transmitter mounted on it, remove the holding screws and position the link between the center terminal and terminal E23. Replace and tighten the holding screws.

(d) Replace and secure the cover on the junction box. Be careful not to bend the extended terminals to which fuse F21 connects. The extended terminals plug into terminals E21 and E24.

(2) *Mounting MT-1898/VRC.*

(a) Loosen the six captive screws on the top of the junction box and remove the cover (fig. 3).

(b) If power fed through the MT-1898/VRC is to be turned on and off at another location, remove the holding screws and position the link between the center terminal and terminal E12. Replace and tighten the holding screws.

(c) If power fed through the MT-1898/VRC is to be turned on and off at the R-442/VRC mounted on it, remove the holding screws and position the link between the center terminal and terminal E14. Replace and tighten the holding screws.

(d) Replace and secure the cover on the junction box. Be careful not to bend the extended terminals to which fuse F11 connects. The extended terminals plug into terminals E11 and E14.

b. Installation of Receiver-Radio R-442/VRC and Receiver-Transmitters, Radio RT-246/VRC and RT-524/VRC. Install the receivers and receiver-transmitters on their mountings as follows:

(1) *Receiver, Radio R-442/VRC.* Make certain that the R-442/VRC is adjusted for the mode of operation (para 7) authorized by the Communications Officer or Chief before installing it on the MT-1898/VRC. Perform the following steps:

(a) Unscrew the clamp on the MT-1898/VRC.

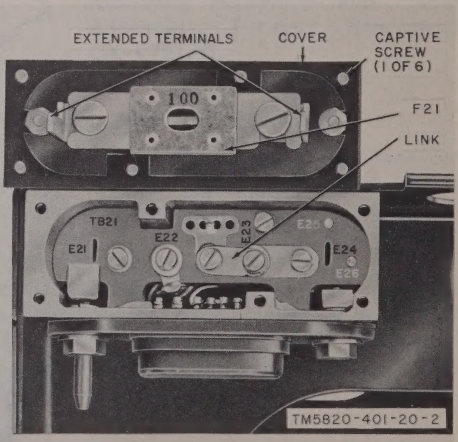

Figure 2. Mounting MT-1029/VRC junction box, cover removed.

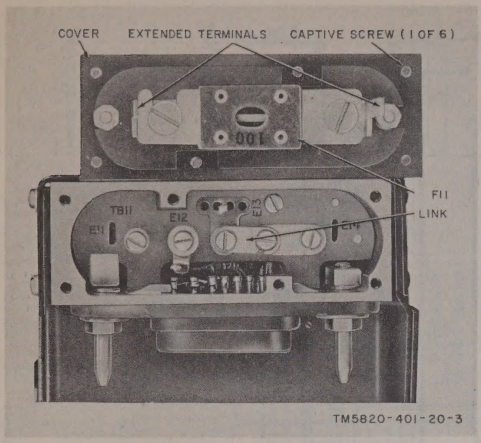

Figure 3. Mounting MT-1898/VRC junction box, cover removed.

(b) Set the R-442/VRC on the MT-1898/VRC.

(c) Mate the connector at the rear of the R-442/VRC with the connector on the MT-1898/VRC junction box. Be sure that the guide pins on the MT-1898/VRC are aligned with the holes on the R-442/VRC.

(d) Push the R-442/VRC back on the MT-1898/VRC.

(e) Engage the clamp on the MT-1898/VRC with the mounting foot on the R-442/VRC. Fasten the clamp securely by turning the thumbscrew.

(2) *Receiver-Transmitters, Radio RT-246/VRC and RT-524/VRC.* Make certain that the receiver-transmitter is adjusted for the mode of operation (para 7) authorized by the Communications Officer or Chief before installing it on the MT-1029/VRC. Perform the following steps:

(a) Unscrew the clamps on the MT-1029/VRC.

(b) Set the receiver-transmitter on the MT-1029/VRC.

(c) Mate the connector at the rear of the receiver-transmitter with the connector on the MT-1029/VRC junction box. Be sure that the guide pins on the MT-1029/VRC are aligned with the holes on the receiver-transmitter.

(d) Push the receiver-transmitter back on the MT-1029/VRC.

(e) Engage the clamps on the MT-1029/VRC with the mounting feet on the receiver-transmitter. Fasten the clamps securely by turning the thumbscrew.

5. Connections

After all of the components of the radio set have been located and secured in place, interconnect the components and connect power to the radio set as shown in the appropriate cording diagram listed in the chart below:

Radio Set	Cording diagram (fig. No.)
AN/VRC-12	4
AN/VRC-43	5
AN/VRC-44	6
AN/VRC-45	7
AN/VRC-46	8
AN/VRC-47	9
AN/VRC-48	10
AN/VRC-49	11

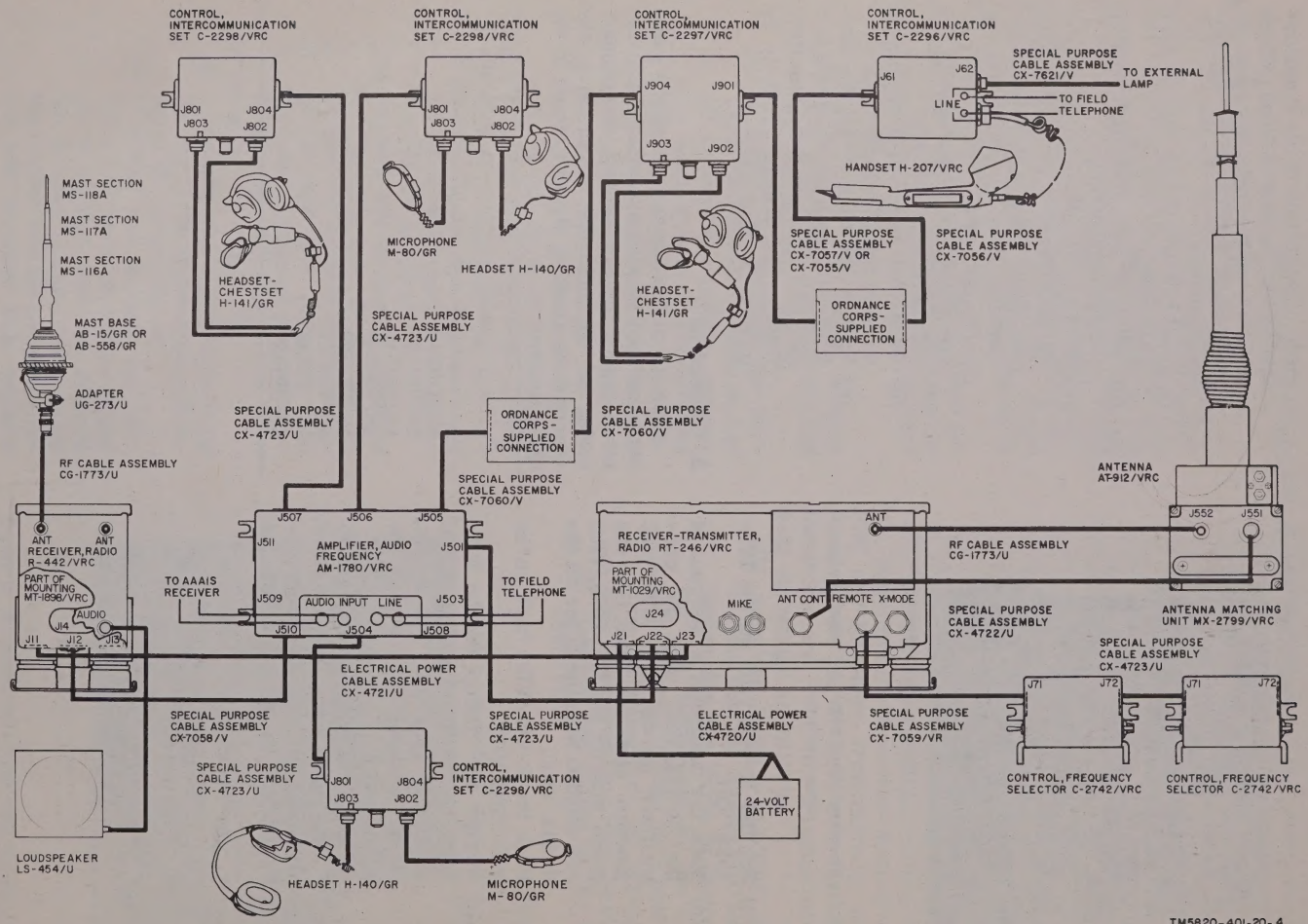

Figure 4. Radio Set AN/VRC–12, typical cording diagram.

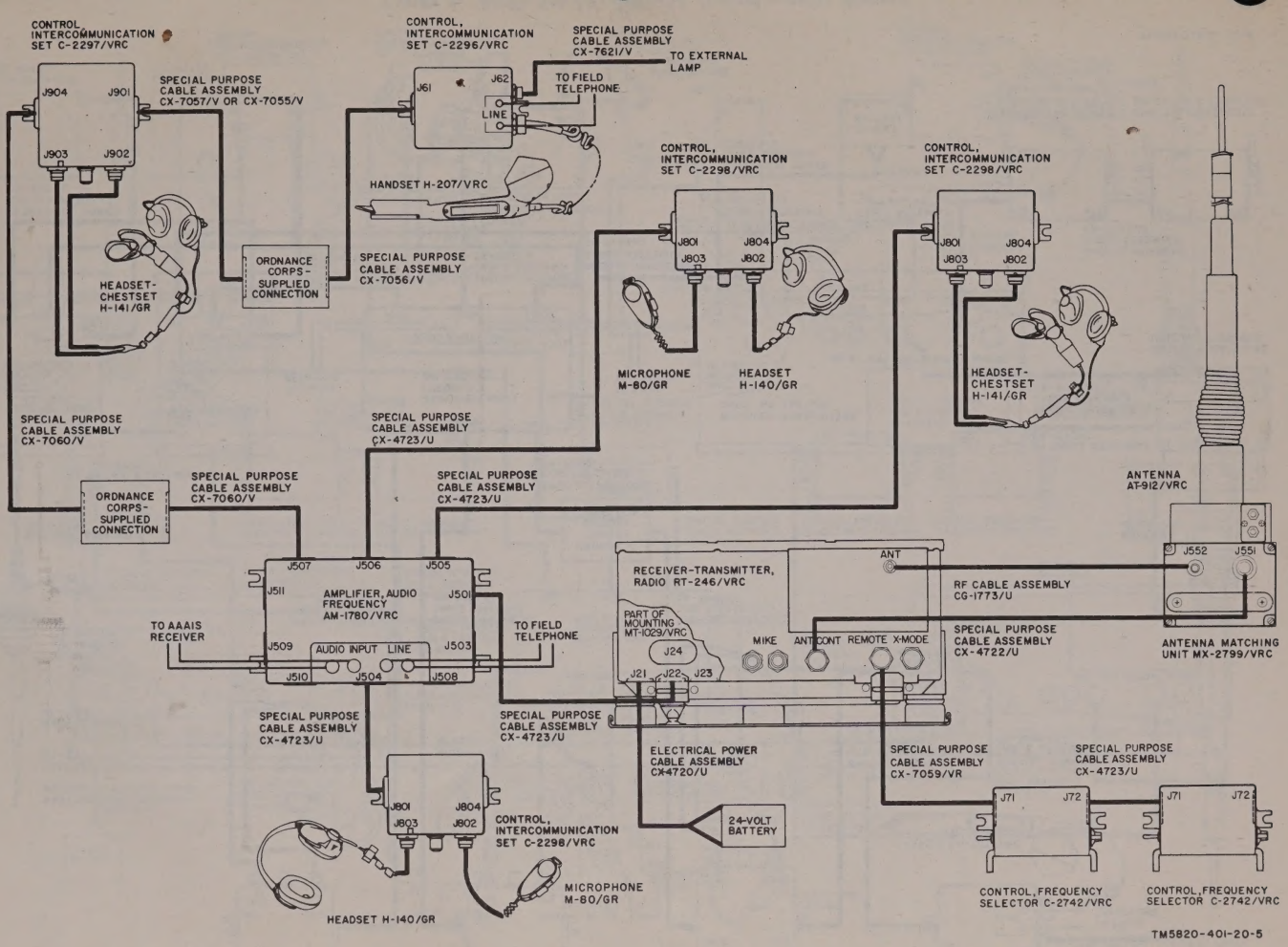

Figure 5. Radio Set AN/VRC-43, typical cording diagram.

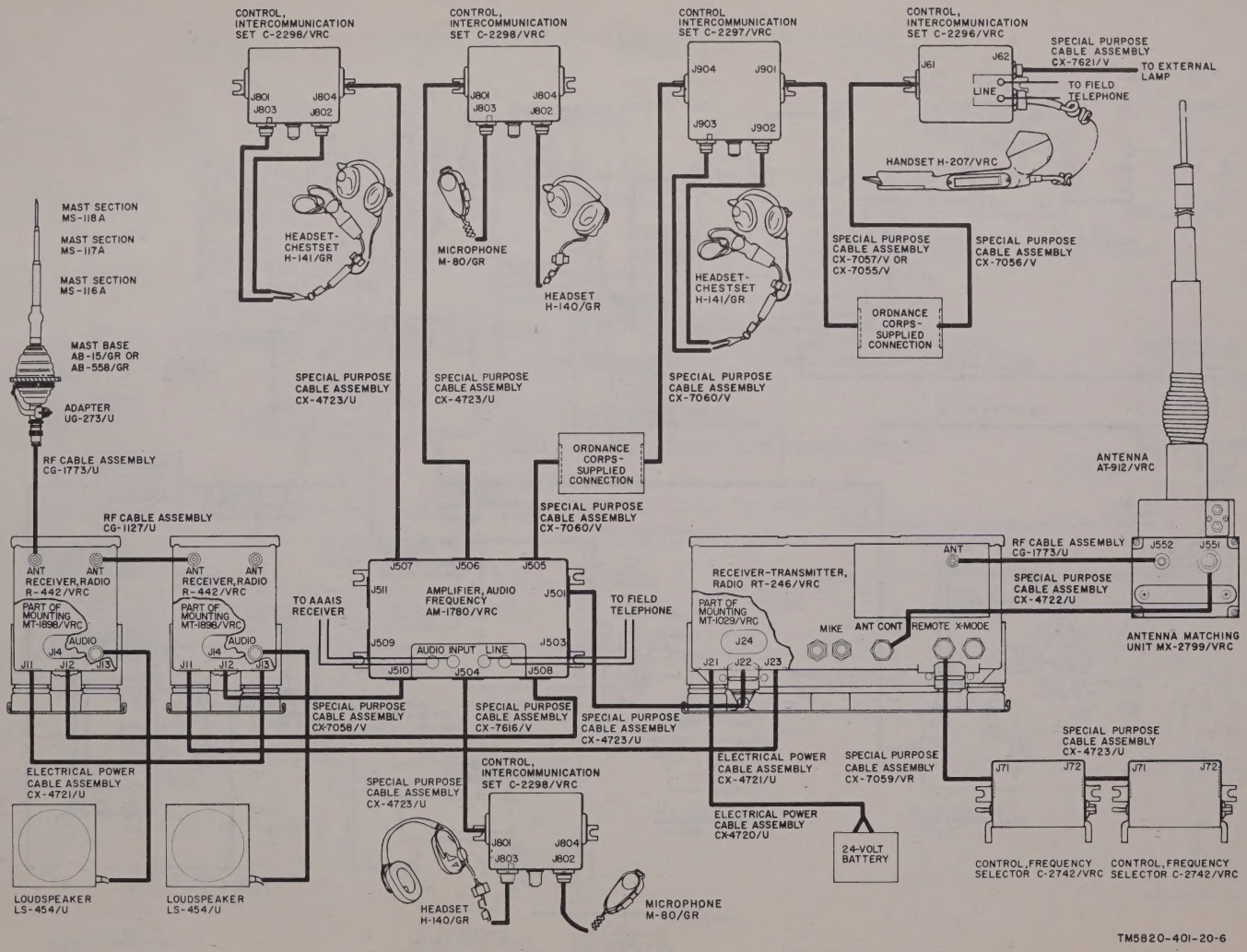

Figure 6. Radio Set AN/VRC–44, typical cording diagram.

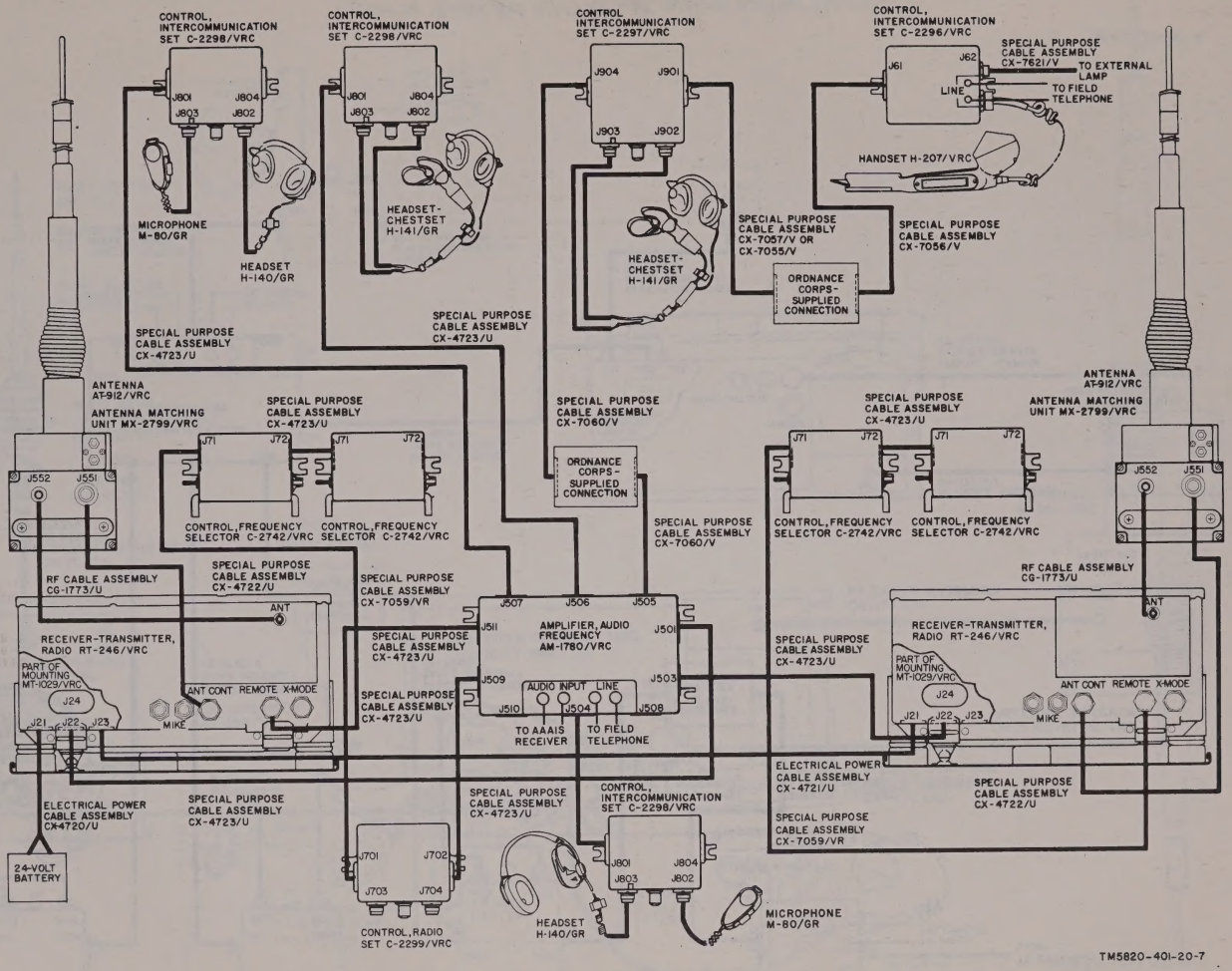

Figure 7. Radio Set AN/VRC-45, typical cording diagram.

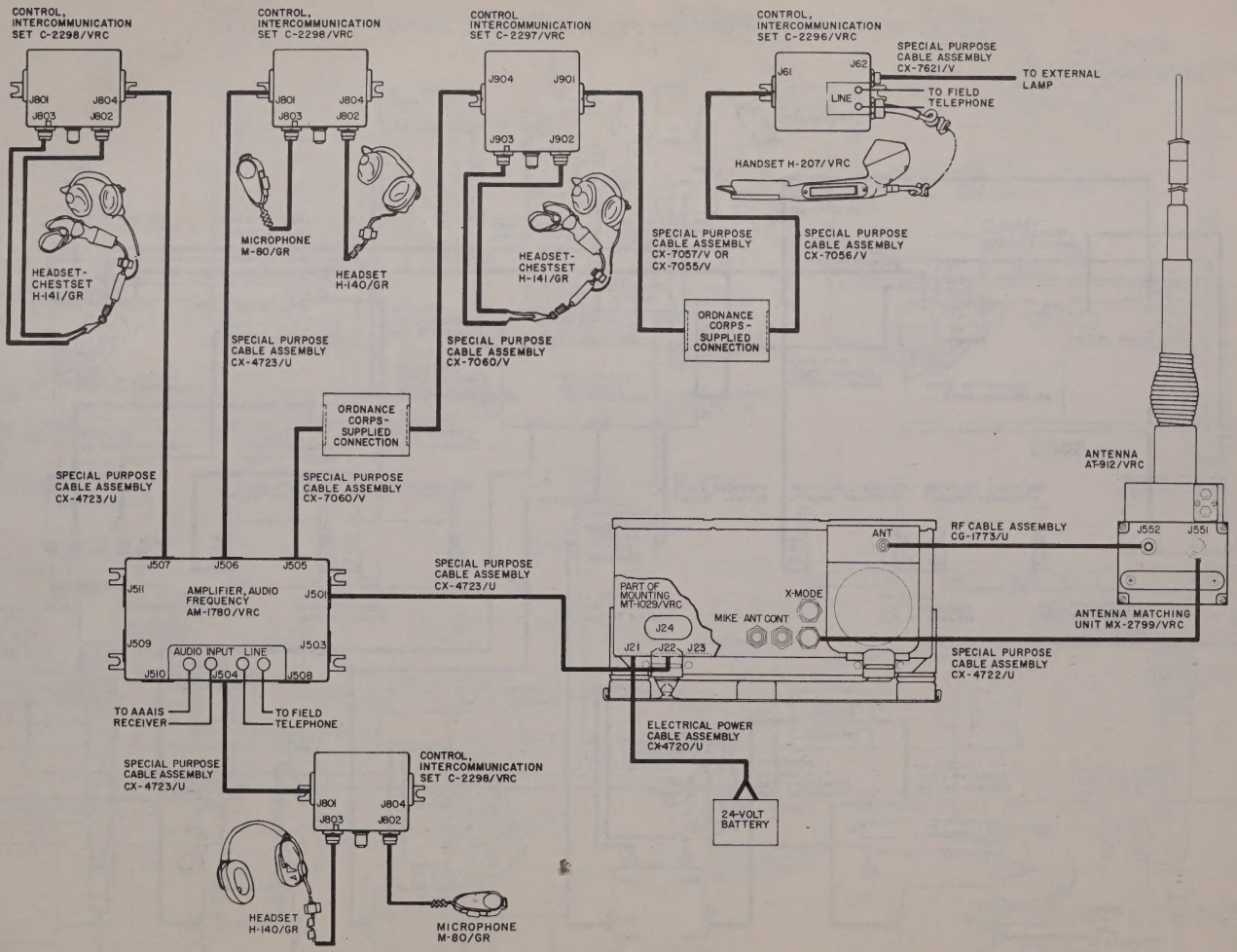

Figure 8. Radio Set AN/VRC-46, typical cording diagram.

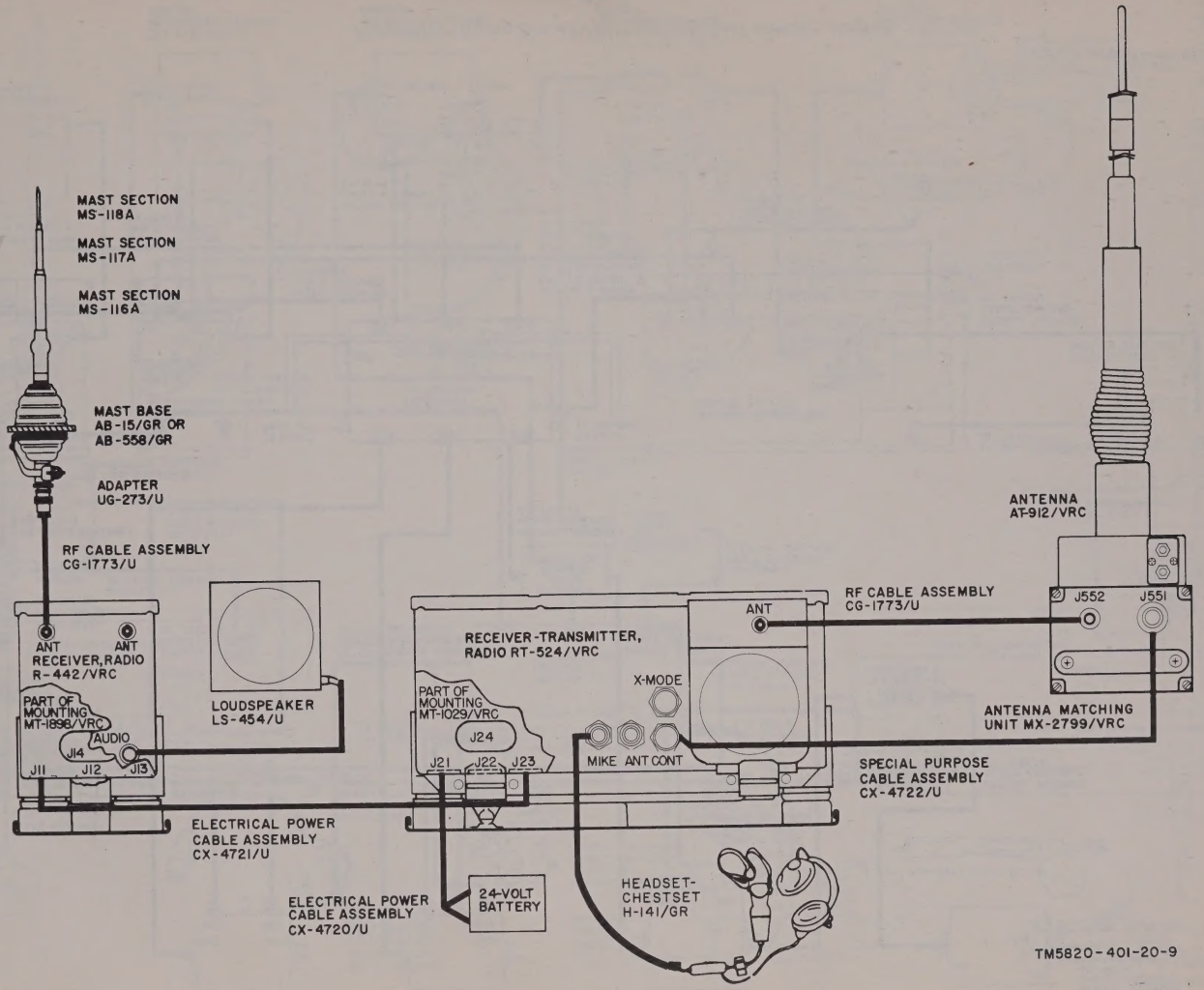

Figure 9. Radio Set AN/VRC-47, typical cording diagram.

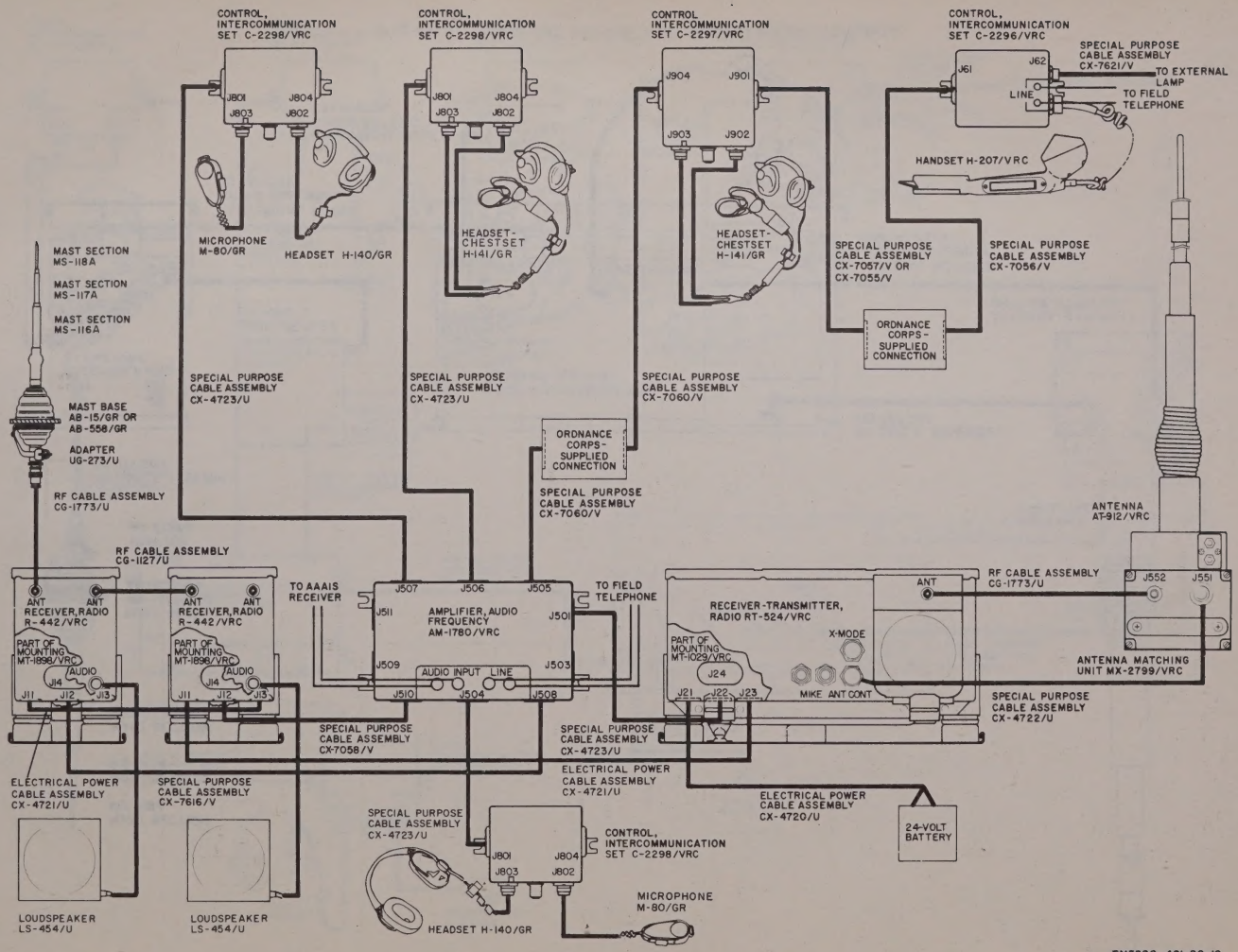

Figure 10. Radio Set AN/VRC-48, typical cording diagram.

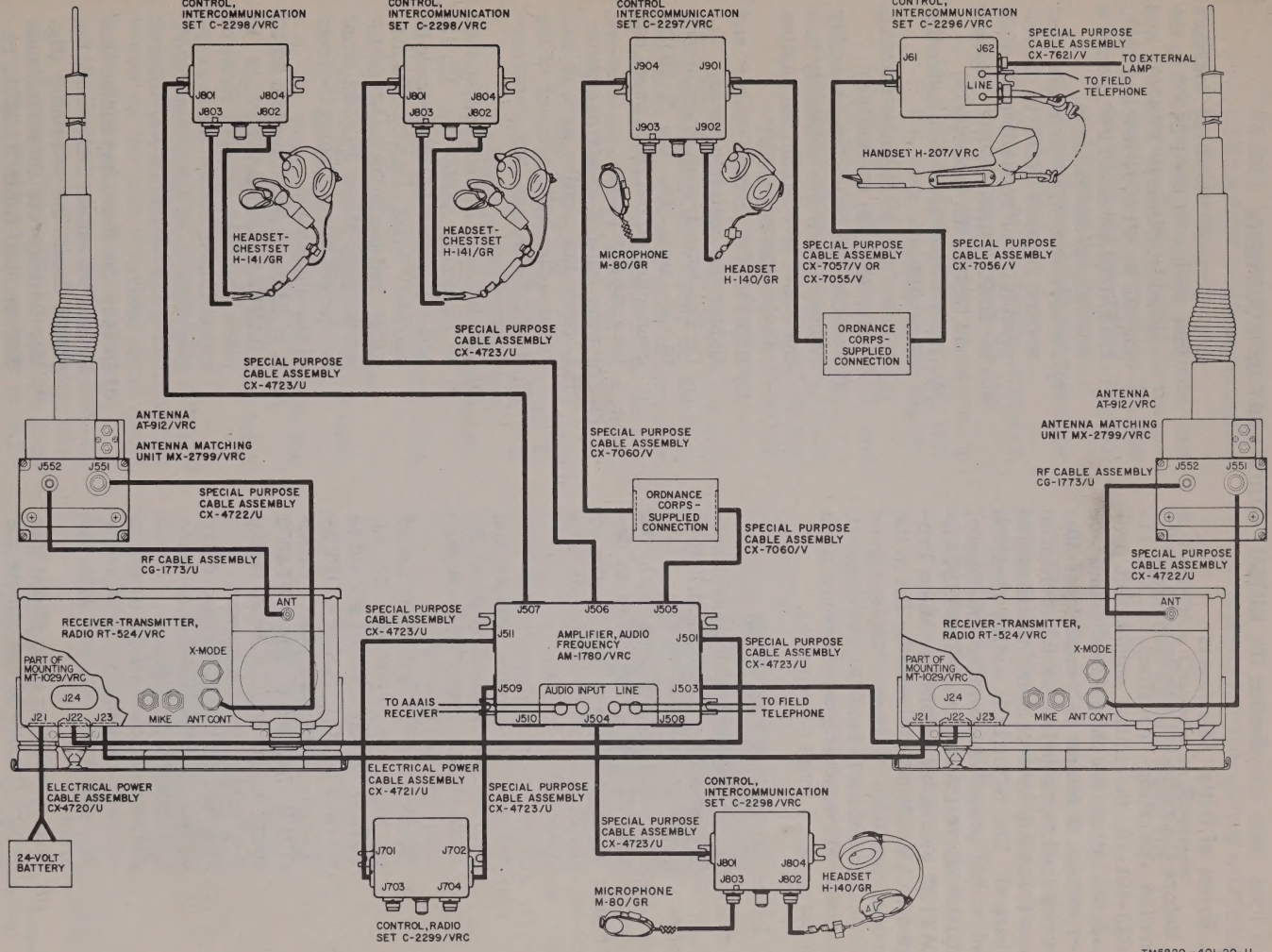

Figure 11. Radio Set AN/VRC–49, typical cording diagram.

6. Extent of Initial Adjustments

Before the radio set can be used for the routine operation described in TM 11-5820-401-10, the initial adjustment procedures given in paragraph 7 must be performed. If remote or X-mode operation is required, appropriate switches must be positioned and components must be changed. The SQUELCH switch must be set to the proper sector for the type of squelch operation required. The INSTALLATION switch on Amplifier, Audio Frequency AM-1780/VRC must be set to the proper position. Whenever the assigned channels for the RT-246/VRC are changed, the channel presetting adjustments given in paragraph 8 must be repeated.

7. Initial Adjustments

Make the adjustments and control settings described below, as required, before operating the radio set.

a. Mode of Operation. Check with the Communications Officer or Chief to determine whether a 50-kilocycle (kc) or 100-kc channel (X-mode) operation is to be used, and proceed as follows:

(1) *For 50-kc channel operation.*

(a) Loosen the captive screws and remove the bottom cover of the R-442/VRC and the receiver-transmitter.

(b) Check filters FL4001 and FL4002 on assembly A4000 (fig. 12, 13, and 14). Filter FL4001 should be marked 50KC CHANNEL OPERATION, and the 50KC CHAN OPER marking on filter FL4002 must be upright as read facing the front of the equipment.

(c) If a filter FL4001 marked WIDE BAND OPERATION is in place and filter FL4002 must be repositioned, loosen the two captive screws on assembly A4000, swing the assembly out, and lock the brace.

(d) Unsnap the four snap slides that secure the shield and remove the shield from the assembly (fig. 15). Remove the three locknuts that secure filter FL4001 to the assembly, remove FL4001, and install an FL4001 marked 50KC CHANNEL OPERATION. Replace and tighten the locknuts.

(e) Remove the five locknuts that secure filter FL4002 to the assembly, and reposition FL4002 to 50KC CHAN OPER. Replace and tighten the locknuts.

(f) Replace the shield and fasten the snap slides.

(g) Turn the X-MODE-NORMAL switch (fig. 15) to NORMAL.

(h) Release the brace on assembly A4000, lower the assembly into the case, and tighten the captive screws that secure it.

(i) Replace the bottom cover and tighten the captive screws.

(j) On receiver-transmitters, check to be sure that the X-MODE connector on the front panel has the cover in place.

(2) *For wide-band (X-mode) operation.*

(a) Loosen the captive screws and remove the bottom cover of the R-442/VRC and the receiver-transmitter.

(b) Check filters FL4001 and FL4002 on assembly A4000 (fig. 12, 13, and 14). Filter FL4001 should be marked WIDE BAND OPERATION, and the WIDE BAND OPER marking on filter FL4002 must be upright as read facing the front of the equipment.

(c) If a filter FL4001 marked 50KC CHANNEL OPERATION is in place and filter FL4002 must be repositioned, loosen the two captive screws on assembly A4000, swing the assembly out, and lock the brace.

(d) Unsnap the four snap slides that secure the shield and remove the shield from the assembly (fig. 15). Remove the three locknuts that secure filter FL4001, remove FL4001, and install an

FL4001 marked WIDE BAND OPERATION. Replace and tighten the locknuts.

(e) Remove the five locknuts that secure filter FL4002 to the assembly, and reposition FL4002 to WIDE BAND OPER. Replace and tighten the locknuts.

(f) Replace the shield and fasten the snap slides.

(g) Turn the X-MODE-NORMAL switch (fig. 15) to X-MODE.

(h) Release the brace on assembly A4000, lower the assembly into the case, and tighten the captive screws that secure it.

(i) Replace the bottom cover and tighten the captive screws.

(j) On receiver-transmitters, check to be sure that the X-MODE cable is connected to the X-MODE connector on the front panel.

b. SQUELCH Switch Setting. Check with the Communications Officer or Chief to determine which type of squelch operation is to be used on the receiver and the receiver-transmitter. Proceed as follows:

(1) *For OLD squelch operation.*

(a) Snap the SQUELCH switch latch to the extreme left. Figure 16 shows the SQUELCH switch latch location on the RT-246/VRC.

(b) Place the switch pointer in the OLD ON-OFF sector.

(c) Snap the SQUELCH switch latch to the right.

(2) *For NEW squelch operation.*

(a) Snap the SQUELCH switch latch to the extreme left.

(b) Place the switch pointer in the NEW ON-OFF sector.

(c) Snap the SQUELCH switch latch to the right.

c. AM-1780/VRC INSTALLATION Switch Setting. Set the INSTALLATION switch on the AM-1780/VRC front panel to the required position as follows:

(1) On Radio Sets AN/VRC-45 and -49, that have Control, Intercommunication C2299/VRC installed, turn the INSULATION switch to RETRANS.

(2) On all other radio sets, turn the INSTALLATION switch to OTHER.

8. Presetting Channels on Receiver-Transmitter, Radio RT-246/VRC (fig. 16)

a. Turn the POWER switch to LOW.

b. Turn the BAND switch to AUTO.

c. Open the hinged cover on the channel button assembly by loosening the two captive screws.

d. Set each channel button as follows:

(1) Set the band selector (beside the channel button being set) to A or B, depending on which band includes the desired frequency.

(2) Push in the channel button.

(3) Push in and hold the TUNE button.

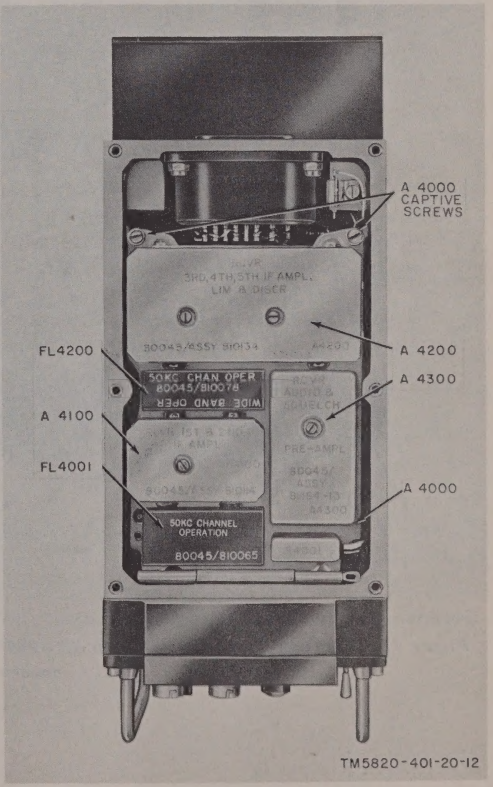

Figure 12. Receiver, Radio R-442/VRC, bottom cover (adjusted for 50-kc channel operation) removed.

(4) Adjust the preset control (above or below the channel button being set) until the desired channel appears in the dial window.

(5) Release the TUNE button.

e. Close the hinged cover and tighten the captive screws.

f. Use the write-in spaces, on the hinged cover above the channel buttons, to note the preset channel frequencies or any other notes that may be required.

g. Check the preceding adjustments by pressing each channel button and observing the channels that appear in the dial window.

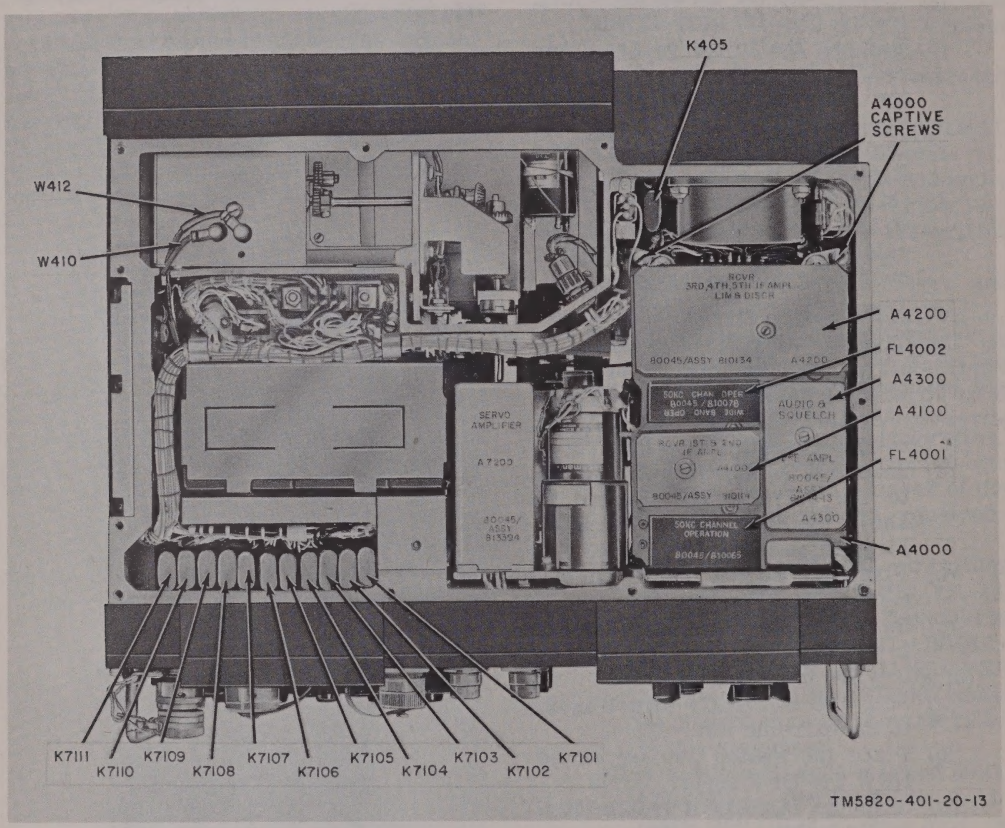

Figure 13. Receiver-Transmitter, Radio RT–246/VRC, bottom (adjusted for 50–kc channel operation) cover removed.

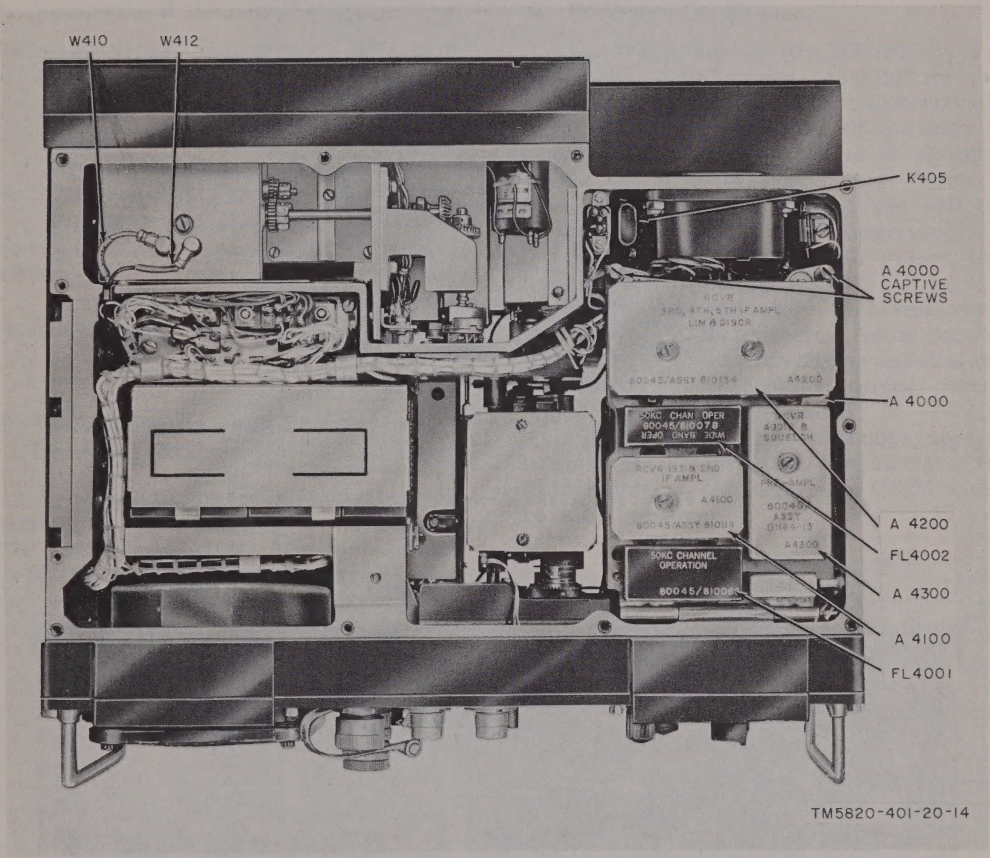

Figure 14. Receiver-Transmitter, Radio RT–524/VRC, bottom (adjusted for 50–kc channel operation) cover removed.

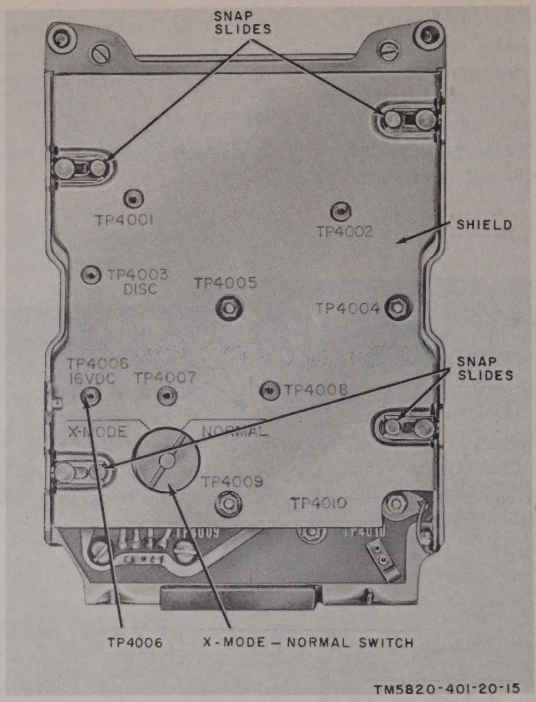

Figure 15. Assembly A4000, bottom view.

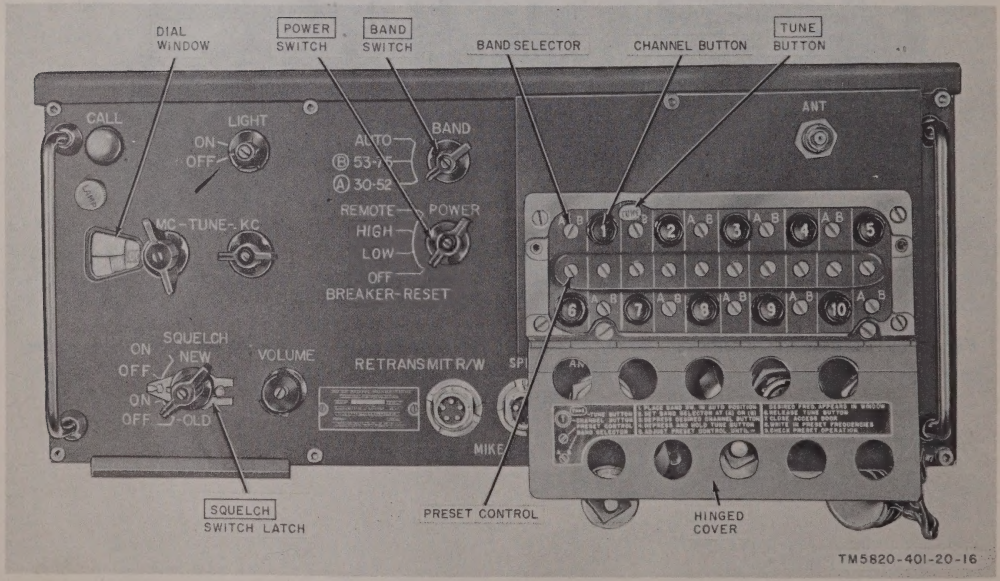

Figure 16. Receiver-Transmitter, Radio RT–246/VRC, front panel adjustments.

CHAPTER 2

MAINTENANCE INSTRUCTIONS

Section I. MAINTENANCE

9. Organizational Maintenance Duties

Organizational maintenance of a radio set consists of the following:

a. Preventive maintenance (para 11).

b. Visual inspection (para 12).

c. Troubleshooting, using equipment performance checklist (para 13).

d. Removal and replacement of tubes, relays, cables, and modules (para 14 through 20).

e. Cleaning of receiver-transmitter heat exchanger (para 21).

10. Tools, Materials, and Test Equipment Required

A list of parts normally stocked for organizational maintenance is contained in TM 11-5820-401-20P. The tools, materials, and test equipment required for organizational maintenance are listed below.

a. Tools and Materials.

(1) Tool Equipment TK-115/U.

(2) Cleaning Compound (Federal stock No. 7930-395-9542).

Warning: **Cleaning compound is flammable and its fumes are toxic. Do not use near a flame; provide adequate ventilation.**

b. Test Equipment.

(1) Multimeter AN/URM-105.

(2) Electron Tube Test Set TV-7(*)/U.

Note: Official nomenclature followed by (*) refers to all models of the equipment.

11. Preventive Maintenance

a. DA Form 11-238 (fig. 17 and 18) is a preventive maintenance checklist for use by organizational maintenance personnel. Items not applicable to the equipment are lined out. Additional preventive maintenance information concerning items 1 through 12 on DA Form 11-238 will be found in the preventive maintenance portion of TM 11-5820-401-10. Follow the instructions on the form.

Warning: **When power to a receiver-transmitter is disconnected, some capacitors may still retain a dangerous charge. Before touching exposed electrical parts, short-circuit them to ground.**

b. The information in this subparagraph is supplementary to DA Form 11-238. The item numbers correspond to ITEM numbers on the form.

Item	Maintenance procedures
5	Tighten screws, bolts, and nuts carefully. Fittings tightened beyond the pressure for which they were designed will become damaged or broken.
7	Cover cuts in cord or cable insulation with rubber tape and then with fabric tape. Replace or repair all broken cords or cables.
15	Make certain that the tubes and relays are firmly seated in their sockets. Make certain that the module holddown screws are tight.
19	Use a small, dry, stiff-bristled brush to clean the receiver-transmitter heat exchanger (para 21). Clean the vanes on the blower motor squirrel cage.

ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS	CONDITION
26. INSPECT ANTENNA FOR ECCENTRICITIES, CORROSION, LOOSE FIT, DAMAGED INSULATORS AND REFLECTORS.	✓
27. CHECK FOR NORMAL OPERATION.	✓
28. ~~BEFORE SHIPPING OR STORING, REMOVE BATTERIES.~~	

IF DEFICIENCIES NOTED ARE NOT CORRECTED DURING THE INSPECTION, INDICATE ACTION TAKEN FOR CORRECTION.

ITEM 20. TERMINAL BLOCK CRACKED IN RT-246/VRC. REPORTED TO HIGHER ECHELON FOR REPLACEMENT.

L. FREDERICKS

FOLD

MAINTENANCE CHECK LIST FOR SIGNAL EQUIPMENT
SOUND EQUIPMENT, RADIO, DIRECTION FINDING
RADAR, CARRIER, RADIOSONDE AND TELEVISION
(AR 750-625)

EQUIPMENT NOMENCLATURE: RADIO SET AN/VRC-12

EQUIPMENT SERIAL NUMBER: 000

INSTRUCTIONS

This form may be used for a period of one month by using the correct dates and weeks of the month. It is to be used as a Preventive Maintenance check list for Signal equipment in actual use, or for a check on equipment prior to issue.

1. For detailed Preventive Maintenance instructions see:
   a. The Technical Manual *(in TM 11 series)* for the equipment. *(See DA Pamphlet Number 310-4)*
   b. The Supply Bulletin *(SB 11-100 series)* for the equipment. *(See DA Pamphlet Number 310-4)*
   c. The Department of the Army Lubrication Order. *(See DA Pamphlet Number 310-4)*

2. The following action will be taken by either the Communications Officer/ Chief for 1st echelon, or the Inspector for higher echelon:
   a. Enter Equipment Nomenclature and Serial Number.
   b. Strike out items that do not apply to the equipment.

3. Operator/Inspector will enter in the columns entitled CONDITION, on the proper line, a notation regarding the condition, using symbols specified under LEGEND.

4. After operator completes each daily inspection he will initial over the appropriate dates under "Daily Condition for Month", then return form to his supervisor.

TYPE OF INSPECTION: PREVENTIVE MAINTENANCE

OPERATOR	2/3 ECHELON	DATE	SIGNATURE
	✓	7 FEB 1962	Leonard Fredericks

4

DA FORM 1 MAY 57 11-238

REPLACES DA FORMS 11-238, 1 NOV 55; 11-239, 11-244, 11-245, 11-248, 11-249, 11-250, AND 11-251; WHICH ARE OBSOLETE.

TM5820-401-20-17

Figure 17. DA Form 11-238, pages 1 and 4.

LEGEND for marking conditions:
Satisfactory, ✓.
Adjustment, Repair or Replacement required, X.
Defect corrected, (X).

DAILY CONDITION FOR MONTH OF FEBRUARY 1962

NO.	DAILY ITEM	1 17	2 18	3 19	4 20	5 21	6 22	7 23	8 24	9 25	10 26	11 27	12 28	13 29	14 30	15 31	16	2D 3D ECHELON
1.	COMPLETENESS AND GENERAL CONDITION OF EQUIPMENT. *(Transmitter, receiver, carrying cases, wire, cables, microphones, tubes, spare parts, technical manuals).*																	✓
2.	CLEAN DIRT AND MOISTURE FROM ANTENNA, MICROPHONES, HEADSETS, KEYS, JACKS, PLUGS, COMPONENT PANELS.																	✓
3.	INSPECT CONTROLS FOR NORMAL OPERATION. TAP CONTROLS LIGHTLY FOR EVIDENCE OF CUT-OUT FROM LOOSE CONTACTS.																	✓
4.	CHECK FOR NORMAL OPERATION OF EQUIPMENT. BE ALERT FOR UNUSUAL OPERATION OR CONDITION.																	✓

WEEKLY	CONDITION EACH WEEK 1ST	2D	3D	4TH	5TH	2D 3D ECH
5. CLEAN AND TIGHTEN EXTERIORS OF CASES, RACKS, MOUNTS, TRANSMISSION LINES.						✓
6. INSPECT CASES, MOUNTS, ANTENNA TOWERS AND EXPOSED METAL SURFACES FOR RUST, CORROSION.						✓
7. INSPECT CORDS, CABLE, WIRE, SHOCK MOUNTS FOR CUTS, KINKS, BREAKS, FRAYING, UNDUE STRAIN.						(X)
8. ~~CHECK ANTENNA GUY WIRES FOR PROPER TENSION OR DAMAGE.~~						
9. INSPECT CANVAS AND LEATHER ITEMS FOR MILDEW, TEARS, FRAYING.						✓
10. INSPECT ACCESSIBLE ITEMS FOR LOOSENESS: SWITCHES, KNOBS, JACKS, CONNECTORS, RELAYS, TRANSFORMERS, MOTORS, PILOT LIGHTS, BLOWERS, ETC.						✓
11. CLEAN AND/OR INSPECT AIR FILTERS, BRASS NAME PLATES, DIAL AND METER WINDOWS.						✓
12. ~~INSPECT STORAGE BATTERIES FOR DIRT, LOOSE TERMINALS, SPECIFIC GRAVITY, DAMAGED CASES. INSPECT DRY BATTERIES FOR LEAKAGE.~~						

ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS	CONDITION
13. INSPECT SHELTERS AND COVERS FOR ADEQUACY OF WEATHER-PROOFING, TEARS, FRAYING.	✓
14. CHECK TERMINAL BOX COVERS FOR CRACKS, DIRT, LEAKS, DAMAGED GASKETS, GREASE.	✓

ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS	CONDITION
15. INSPECT SEATING OF READILY ACCESSIBLE PLUCK-OUT ITEMS: TUBES, LAMPS, FUSES, CRYSTALS, CONNECTORS, VIBRATORS, PLUG-IN COILS.	✓
16. ~~INSPECT RELAYS AND CIRCUIT BREAKERS FOR LOOSE MOUNTINGS, BAD CONTACTS, MIS-ALINEMENT OF CONTACTS AND SPRINGS, PROPER SPRING TENSION.~~	
17. ~~INSPECT VARIABLE CAPACITORS FOR DIRT, MIS-ALINEMENT OF PLATES, LOOSE MOUNTINGS, MOISTURE.~~	
18. INSPECT RESISTORS, BUSHINGS AND INSULATORS FOR CRACKS, CHIPPING, BLISTERING, MOISTURE, DISCOLORATION.	✓
19. CLEAN AND TIGHTEN SWITCHES, TERMINAL BLOCKS, BLOWERS, RELAY CASES AND INTERIORS OF CHASSIS AND CABINETS NOT READILY ACCESSIBLE.	✓
20. INSPECT TERMINAL BLOCKS FOR LOOSE CONNECTIONS, CRACKS AND BREAKS.	X
21. INSPECT TERMINALS OF LARGE FIXED CAPACITORS AND RESISTORS FOR DIRT, CORROSION, LOOSE CONTACTS.	✓
22. INSPECT TRANSFORMERS, CHOKES, POTENTIOMETERS AND RHEOSTATS FOR OVERHEATING AND OIL LEAKAGE.	✓
23. ~~INSPECT GENERATORS, AMPLIDYNES, DYNA-MOTORS FOR BRUSH WEAR, SPRING TENSION, ARCING AND FITTING OF COMMUTATOR.~~	
24. ~~INSPECT CATHODE RAY TUBES FOR BURNT SCREEN SPOTS.~~	
25. INSPECT WATERPROOF GASKETS FOR LEAKS, WORN OR LOOSE PARTS.	✓

CONTINUED ON PAGE 4

GPO: 1957 O—427034

Figure 18. DA Form 11–238, pages 2 and 3.

12. Visual Inspection

a. Before operating the radio set for troubleshooting purposes, inspect it for visible defects. This saves repair time and may prevent further damage to the radio set. *Do not inspect any item with power on.* Inspect the following for obvious defects:

(1) The seating of all connectors.
(2) Cracked or broken printed wiring boards.
(3) Main frame wiring dress for possible shorts (especially after handling or repairing the equipment).

b. If the visual inspection does not locate the trouble, proceed to the equipment performance checklist (para 13).

13. Equipment Performance Checklist

a. General. The equipment performance checklist is a procedure for systematically checking equipment performance. It is assumed that all additional equipment used in the performance check is known to be good. All corrective measures which organizational maintenance personnel can perform are given in the *Corrective measures* column. When using a checklist, start at the beginning and follow each step in order. If the corrective measures indicated do not repair the equipment, troubleshooting is required by higher echelon. Note on the repair tag how the equipment performed, and what corrective measures were taken.

b. Procedure. Check the performance of the equipment as shown in the checklists below. After placing the equipment in operation, allow it to warm up for about 1 minute before proceeding with the performance checks.

Note: All voltage measurements required in the steps of the checklists are referenced to ground.

***Caution:* The holddown screws for the modules connect the module grounds to chassis ground. Do not loosen the screws for more than one module at a time when troubleshooting and be certain to tighten all screws when replacing a module. Even a good module may not work properly if the holddown screws are not tightened. If replacement of a module or part does not restore normal operation, remove the new module or part and put back the original.**

***Warning:* Extremely dangerous voltages of +275 and +700 volts direct current (dc) exist in assemblies A9000, A6100, and A6200 during transmission. Take all necessary precautions to protect personnel and test equipment from damage resulting from careless contact with these voltages.**

c. Checklist for Receiver, Radio R-442/VRC.

Note: Parts removal and replacement procedures for the R-442/VRC are contained in paragraph 16.

	Step	Action	Normal indication	Corrective measures
P	1	Set POWER switch to OFF.		
R	2	Mount R-442/VRC on MT-1898/VRC (para 4).		
E	3	Connect rf cable from antenna to ANT connector.		
P.	4	Connect audio accessories to AUDIO connectors.		
E	5	Set POWER switch to ON-RESET. Turn LIGHT switch to ON.	Dial lamp lights. Proceed to step 7 if lamp lights.	If POWER switch moves to OFF, reset it to ON-RESET. If POWER switch moves to OFF again, higher echelon repair is required.
Q				Replace dial lamp.
U	6	Set POWER switch to OFF. Remove R-442/VRC from MT-1898/VRC and measure voltage from terminal C of connector J14 on MT-1898/VRC junction box to ground.	+22 to +30 volts dc..	Check battery voltage and battery cable connections. Check continuity of battery cables and fuse F11 (para 18); replace as required. Check MT-1898/VRC by substitution.
I				
P.				
P				
E				
R				
F.				

	Step	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE	7	Replace R-442/VRC on MT-1898/VRC if removed in preceding step. Set POWER switch to ON-RESET. Turn SQUELCH switch to OLD OFF. Turn VOLUME control to mid-range. Turn KC-TUNE control through a number of channels.	Rushing noise is heard in audio accessory on channels where no signal is received.	Check audio accessories by substitution. Remove top cover of R-422/VRC (fig. 19). Loosen captive screw that secures A3000, swing the assembly out and lock the brace. Make the following voltage checks: Check for +25.5 volts dc at TP5003. If abnormal, higher echelon repair required. Check for +15.8 to +16.2 volts dc at TP5010. If abnormal, check A2100. Check A5100, A4300, and A4200. Check FL4002 by substitution. Check A4100. Check FL4001 by substitution.
	8	Set up nearby transmitter to transmit on a band A channel and tune R-442/VRC to this channel. Obtain a long voice test signal from the transmitter.	Test signal is heard loud and clear.	If received signal is weak, check antenna and antenna connections. If signal cannot be received at all, check A3100, A3200, A3300, A3400, A3500, A3600, and A3700. Check K3001 by substitution. Check W203 and W202/W402. Check audio accessories by substitution. Check A1600. If audio signal is distorted, check FL4002 and FL4001 by substitution. Check A4200, A4300, A4100, A5100, and A3700.
	9	Set up nearby transmitter to transmit on a band B channel and tune R-442/VRC to this channel. Obtain a long voice test signal from the transmitter.	Test signal is heard loud and clear.	Higher echelon repair required.
	10	Set up nearby transmitter to transmit on channels listed below. Obtain a long voice test signal on each channel. Tune R-442/VRC to each channel in order given: 30.00 mc 30.05 mc 30.10 mc 30.20 mc 30.30 mc 30.40 mc 30.50 mc 30.70 mc 30.80 mc 30.90 mc	Test signal is heard loud and clear on each channel.	If some but not all channels are received, higher echelon repair is required. If R-442/VRC motorboats, check A3700. Check W204.
	11	Turn SQUELCH switch to OLD ON.	R-442/VRC is quiet (no noise heard in audio accessory).	Check A5200. Check K5002 by substitution. Check A5300.
	12	Turn SQUELCH switch to NEW ON. Obtain a long voice test signal from the transmitter.	CALL indicator lights, and test signal is heard loud and clear.	Check A5200 and A5300.

	Step	Action	Normal indication	Corrective measures
STOP	13	Set POWER switch to OFF.	R-442/VRC stops operating.	

d. Checklist for Receiver-Transmitter, Radio RT-246/VRC.

Note: Parts removal and replacement procedures for the R-442/VRC are contained in paragraph 16.

	Step	Action	Normal indication	Corrective measures
PREPARATORY	1	Turn POWER switch to OFF.		
	2	Mount RT-246/VRC on MT-1029/VRC (para 4).		
	3	Connect antenna into antenna connector of Antenna Matching Unit MX-2799/VRC (para 5).		
	4	Connect Rf cable Assembly CG-1773/U and Cable Assembly, Special Purpose CX-4722/U from connectors J552 and J551 on MX-2799/VRC to ANT and ANT CONT connectors on RT-246/VRC.		
	5	Connect audio accessories to RETRANSMIT – R/W and SPKR connectors.		
EQUIPMENT PERFORMANCE	6	Turn POWER switch to LOW. Turn LIGHT switch to ON.	Dial lamp lights. Proceed to step 8 if lamp lights.	Turn POWER switch to OFF BREAKER-RESET and back to LOW. If circuit breaker trips after resetting, higher echelon repair is required. Replace dial lamp.
	7	Turn POWER switch to OFF. Remove RT-246/VRC from MT-1029/VRC and measure voltage from terminal C of connector J24 on MT-1029/VRC junction box to ground.	+22 to +30 volts dc.....	Check K404 by substitution. Check battery voltage and battery cable connections. Check continuity of battery cables, and fuse F21 (para 18); replace as required. Check MT-1029/VRC by substitution.
	8	Replace RT-246/VRC on MT-1029/VRC if removed in preceding step. Turn POWER switch to LOW. Turn SQUELCH switch to OLD OFF. Turn VOLUME control to mid-range. Turn KC-TUNE control through a number of channels.	Rushing noise is heard in audio accessory on channels where no signal is received.	Check audio accessories by substitution. Remove top cover of RT-246/VRC (fig. 20). Loosen captive screw that secures A3000, swing the assembly out, and lock the brace. Make the following voltage checks: Check for +25.5 volts dc at TP5003. If abnormal, higher echelon repair required. Check for +15.8 to +16.2 volts dc at TP5010. If abnormal, check A2100 . Check A5100, A4300, and A4200. Check FL4002 by substitution. Check A4100. Check FL4001 by substitution.

	Step	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE	9	Set up nearby transmitter to transmit on a band A channel and tune RT-246/VRC to this channel. Obtain a long voice test signal from the transmitter.	Test signal is heard loud and clear.	If received signal is weak, check antenna and antenna connections. If signal cannot be received at all, check A3100, A3200, A3300, A3400, A3500, A3600, and A3700. Check K3001 by substitution. Check W403 and W202/W402. Check audio accessories by substitution. Check A1600. If audio is distorted, check FL4002 and FL4001 by substitution. Check A4200, A4300, A4100, A5100, and A3700.
	10	Set up nearby transmitter to transmit on a band B channel and tune RT-246/VRC to this channel. Obtain a long voice test signal from the transmitter.	Test signal is heard loud and clear.	Higher echelon repair required.
	11	Set up nearby transmitter to transmit on channels listed below. Obtain a long voice test signal on each channel. Tune RT-246/VRC to each channel in order given: 30.00 mc 30.05 mc 30.10 mc 30.20 mc 30.30 mc 30.40 mc 30.50 mc 30.60 mc 30.70 mc 30.80 mc 30.90 mc	Test signal is heard loud and clear on each channel.	If some but not all channels are received, higher echelon repair is required. If RT-246/VRC motorboats, check A3700. Check W404.
	12	Turn SQUELCH switch to OLD ON.	RT-246/VRC is quiet (no noise heard in audio accessory).	Check A5200. Check K5002 by substitution. Check A5300.
	13	Turn SQUELCH switch to NEW ON. Obtain a long voice test signal from the transmitter.	CALL indicator lights, and test signal is heard loud and clear.	Check A5200 and A5300.
	14	*Caution:* **Before placing transmitter in operation, check to see that the AT-912/VRC is properly connected to the RT-246/VRC. Damage may result if it is not properly connected.** Set up a nearby receiver to receive signals transmitted by the RT-246/VRC. Turn SQUELCH switch to OLD OFF. Tune the RT-246/VRC to a band B channel. Turn POWER switch to HIGH.	Receiver section of RT-246/VRC mutes and blower motor runs; test signal is heard loud and clear at nearby receiver.	Turn POWER switch to OFF BREAKER-RESET and back to HIGH. If circuit breaker trips after resetting, higher echelon repair is required. Check microphone by substitution. Tune nearby receiver several channels on either side of operating channel. If signal is received off-channel or is received on several channels (and a loud noise is heard at nearby receiver), loosen captive screws, swing out and lock assembly A8000, and check

	Step	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE		Press the microphone push-to-talk switch and send a long voice test signal.		for 25.5 volts dc at TP8001 (fig. 20). If no voltage is indicated, higher echelon repair is required. Check for +12 volts dc at TP8006 (fig. 20). If no voltage is indicated check A8500. If normal, check A8100, A8200, A8300, and A8400; check W303 and W409. Measure voltages at the following test points on assembly A9000 (fig. 20). (Refer to *e* below for normal voltages.) TP9005 TP9007 TP9006 TP9001 TP9002 TP9004 If voltages at above test points are normal, check antenna cables and MX-2799/VRC by substitution. If signal is still not heard, higher echelon repair is required. If voltages at above test points are abnormal, check K9001 and K9002 by substitution. If still abnormal, check A9000 by substitution. If no voltage is present at TP9006 or TP9007, check K401, K402, and K403 by substitution. Check W407 and W412. Check tubes V6101 and V6201 (para 14). If blower motor does not run, check voltage at TP9003. (See chart, *e* below.) If voltage is abnormal, check A9000 by substitution. If voltage is normal, higher echelon repair is required.
	15	Remove tube V6101 from its socket (para 14). Turn POWER switch to LOW, press the microphone push-to-talk switch, and measure the voltage at V6101 tube socket terminal 7. Turn POWER switch to HIGH, press the microphone push-to-talk switch, and measure the voltage at V6101 tube socket terminal 7.	Voltage measured should be +215 volts dc with POWER switch at LOW and +275 volts dc with POWER switch at HIGH.	Check K406 by substitution.
	16	Replace tube V6101 in its socket (para 14). Tune the RT-246/VRC and the nearby receiver to a band B channel. Press the microphone push-to-talk switch and send a long voice test signal.	Receiver section of RT-246/VRC mutes and blower motor runs; test signal is heard loud and clear at nearby receiver.	Check FL401 by substitution. Check W410 and W411.

	Step	Action	Normal indication	Corrective measures
	17	Turn SQUELCH switches on RT-246/VRC and nearby receiver to NEW ON. Press the microphone push-to-talk switch and send a long voice test signal.	Receiver section of RT-246/VRC mutes and blower motor runs; CALL indicator lights, and test signal is heard loud and clear at nearby receiver.	Check A8500.
	18	Turn BAND switch to AUTO. Push channel button 1.	The channel button 1 preset channel appears in the dial window.	If the wrong channel or a red mark appears in the dial window, readjust the preset control (para 8). If the wrong channel appears again, higher echelon repair is required. If the RT-246/VRC does not change channels, push a second channel button and, after 5 seconds, again push channel button 1. If it still does not change channels, press the TUNE button and measure the voltage at test point TP9003 (fig. 20). (See chart, *e* below.) If voltage is normal, higher echelon repair is required. If voltage is abnormal, check A9000 by substitution. Check K7102 and K7101 by substitution.
	19	Repeat step 17.	Same as step 17	Check A7000.
	20	Repeat step 18 for the remaining nine channel buttons.	Correct assigned channel for each channel button appears in the dial window.	Same as step 18. Note: Relays K7103 through K7111 are associated with channel buttons 2 through 10, respectively.
S T O P	21	Turn POWER switch to OFF BREAKER-RESET	RT-246/VRC stops operating.	

e. Voltage Chart. Assembly A9000 (fig. 20 and 21) output voltages are listed below.

Test point	Input voltage measured at test point TP9005		
	+22 volts dc	+25.5 volts dc	+30 volts dc
TP9001	+600 volts dc min	+690 to +720 volts dc	+850 volts dc max
TP9002	+240 volts dc min	+270 to +310 volts dc	+340 volts dc max
TP9003	90 volts ac min	108 to 116 volts ac	137 volts ac max
TP9004	-12.9 to -12.5 volts dc	-13.3 to -14.7 volts dc	-16.2 to -17.0 volts dc
TP9006	-1 to -1.5 volts dc	-1 to -1.5 volts dc	-1 to -1.5 volts dc
TP9007	-1.8 volts dc max	-1.8 volts dc max	-1.8 volts dc max

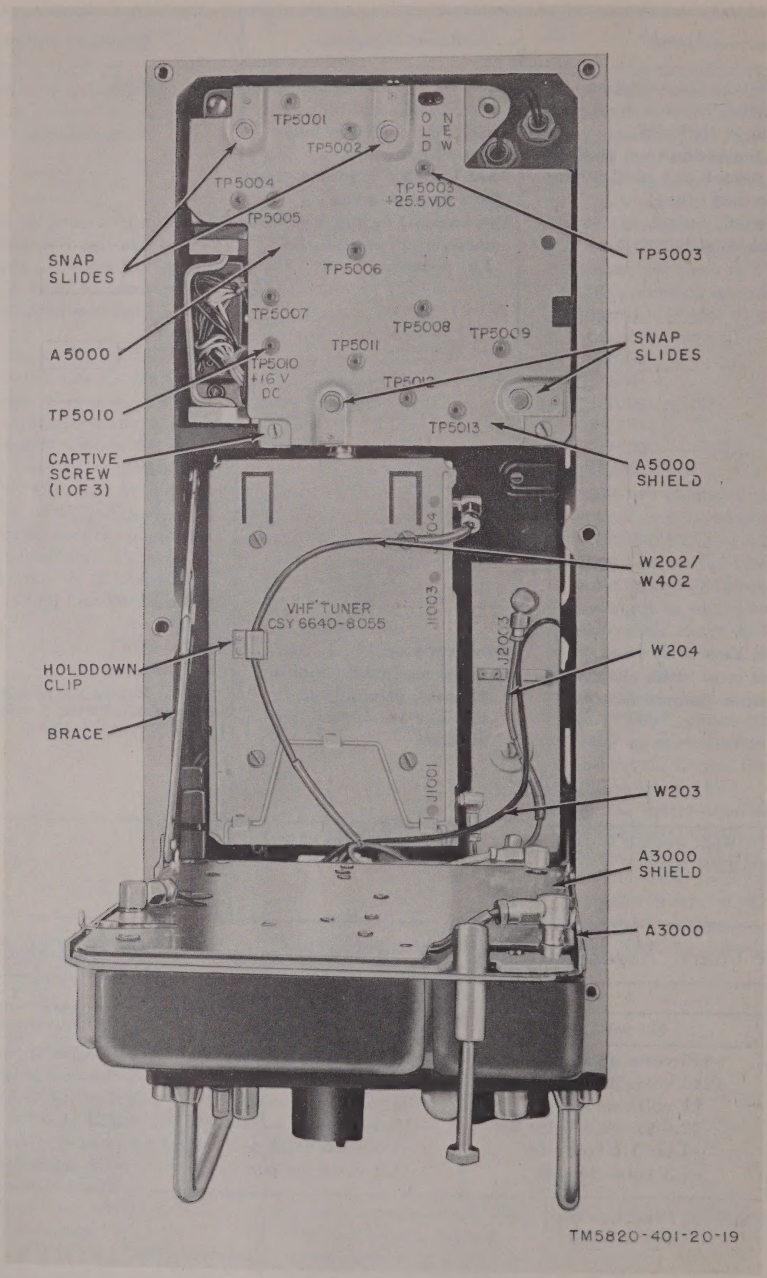

Figure 19. Receiver, radio R–442/VRC, top cover removed and assembly A3000 raised.

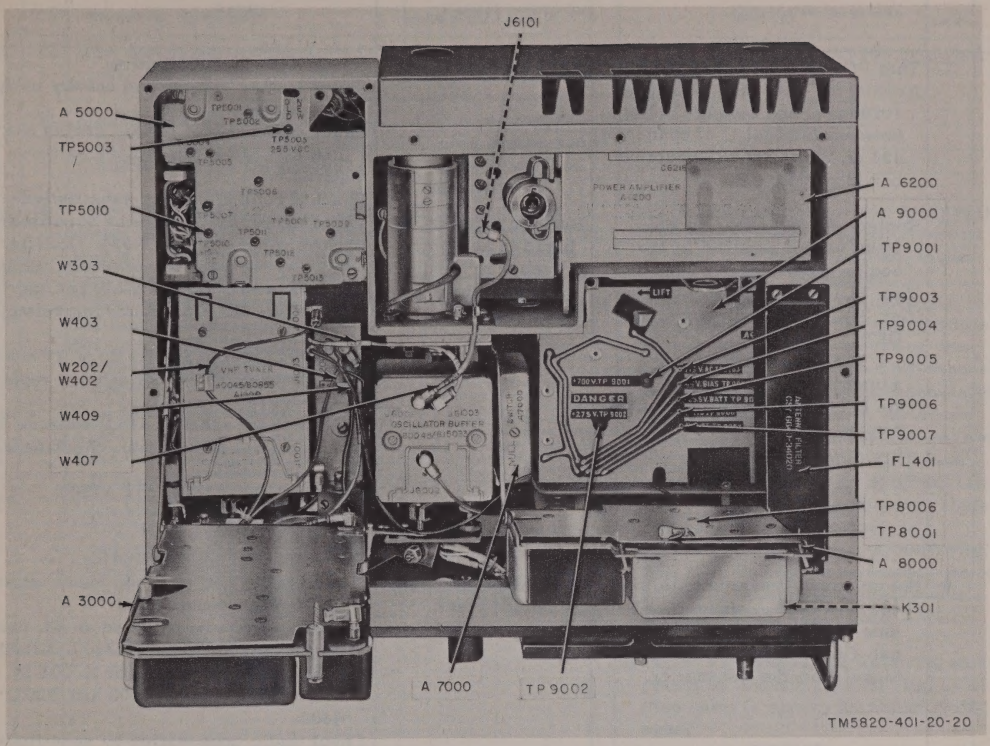

Figure 20. Receiver-Transmitter, Radio RT–246/VRC, top cover removed and assemblies A3000 and A8000 raised.

f. Checklist for Receiver-Transmitter, Radio RT-524/VRC.

Note: Parts removal and replacement procedures for the RT-246/VRC are contained in paragraph 17.

	Step	Action	Normal indication	Corrective measures
PREPRATORY	1	Turn POWER switch to OFF.		
	2	Mount RT-524/VRC on MT-1029/VRC (para 4).		
	3	Connect antenna to antenna connector of Antenna Matching Unit MX-2799/VRC (para 5).		
	4	Connect CG-1773/U and CX-4722/U cables from connectors J552 and J551 on MX-2799/VRC to ANT and ANT CONT connectors on RT-524/VRC.		
	5	Connect audio accessories to RETRANSMIT – R/W and SPRK connectors.		
EQP. PRF.	6	Set POWER switch to LOW . . . . Turn LIGHT switch to ON	Dial lamp lights. Proceed to step 8 if lamp lights.	Turn POWER switch to OFF BREAKER-RESET and back to LOW. If circuit breaker trips after resetting, higher echelon repair is required. Replace dial lamp.

	Step	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE	7	Turn POWER switch to OFF. . . . Remove RT-524/VRC from MT-1029/VRC and measure voltage between terminal C of connector J24 on MT-1029/VRC junction box to ground.	+22 to +30 volts dc. .	Check K404 by substitution. Check battery voltage and battery cable connections. Check continuity of battery cables and fuse F21 (para 18); replace as required. Check MT-1029/VRC by substitution.
	8	Replace RT-524/VRC on MT-1029/VRC if removed in preceding step. Turn POWER switch to LOW. Turn SQUELCH switch to OLD OFF. Turn VOLUME control to midrange. Turn KC-TUNE control through a number of channels.	Rushing noise is heard in audio accessory on channels where no signal is received.	Check audio accessories by substitution. Remove top cover of RT-524/VRC (fig. 21). Loosen captive screw that secures A3000, swing the assembly out and lock the brace. Make the following voltage checks: Check for +25.5 volts dc at TP5003. If abnormal, higher echelon repair required. Check for +15.8 to +16.2 volts dc at TP5010. If abnormal, check assembly A2100. Check A5100, A4300, and A4200. Check FL4002 by substitution. Check A4100. Check FL4001 by substitution.
	9	Set up nearby transmitter to transmit on a band A channel and tune RT-524/VRC to this channel. Obtain a long voice test signal from the transmitter.	Test signal is heard loud and clear.	If received signal is weak, check antenna and antenna connections. If signal cannot be received at all, check A3100, A3200, A3300, A3400, A3500, A3600, and A3700. Check K3001 by substitution. Check W403 and W202/W402. Check audio accessories by substitution. Check A1600. If audio is distorted, check FL4002 and FL4001 by substitution. Check A4200, A4300, A4100, A5100, and A3700.
	10	Set up nearby transmitter to transmit on a band B channel and tune RT-524/VRC to this channel. Obtain a long voice test signal from the transmitter.	Test signal is heard loud and clear.	Higher echelon repair required.
	11	Set up nearby transmitter to transmit on channels listed below. Obtain a long voice test signal on each channel. Tune RT-524/VRC to each channel in order given. 30.00 mc 30.05 mc 30.10 mc 30.20 mc 30.30 mc 30.40 mc 30.50 mc 30.60 mc 30.70 mc 30.80 mc 30.90 mc	Test signal is heard loud and clear on each channel.	If some but not all channels are received, higher echelon repair is required. If RT-524/VRC motorboats, check A3700 and W404

	Step	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE	12	Turn SQUELCH switch to OLD ON.	RT-524/VRC is quiet (no noise heard in audio accessory).	Check A5200. Check K5002 by substitution. Check A5300.
	13	Turn SQUELCH switch to NEW ON. Obtain a long voice test signal from the transmitter.	CALL indicator lights, and test signal is heard loud and clear.	Check A5200 and A5300.
	14	*Caution:* Before placing transmitter in operation, check to see that the AT-912/VRC is properly connected to the RT-524/VRC. Damaged may result if it is not properly connected. Set up a nearby receiver to receive signals transmitted by the RT-524/VRC. Turn SQUELCH switch to OLD OFF. Tune the RT-524/VRC to a band B channel. Turn POWER switch to HIGH . . . Press the microphone push-to-talk switch and send a long voice test signal.	Receiver section of RT-524/VRC mutes and blower motor runs; test signal is heard loud and clear at nearby receiver.	Turn POWER switch to OFF BREAKER-RESET and back to HIGH. If circuit breaker trips after resetting, higher echelon repair is required. Check microphone by substitution. Tune nearby receiver several channels on either side of the operating channel. If signal is received off-channel or is received on several channels (and a loud noise is heard at the nearby receiver), loosen captive screws, swing out and lock assembly A8000, and check for 25.5 volts dc of TP8001 (fig. 21). If no voltage is indicated, higher echelon repair is required. Check for +12 volts dc at TP8006 (fig. 21). If no voltage is indicated, check A8500. If voltage is normal, check A8100, A8200, A8300, and A8400; check W303 and W409. Measure voltages at the following test points on assembly A9000 (fig. 21). (See chart (*e* above) for normal voltages.) TP9005 TP9007 TP9006 TP9001 TP9002 TP9004 If voltages at above test points are normal, check antenna cables and MX-2799/VRC by substitution. If signal is still not heard, higher echelon repair is required. If voltages at above test points are abnormal, check K9001 and K9002 by substitution. If still abnormal, recheck A9000. If no voltage is present at test point TP9006 or TP9007, check K401, K402, and K403 by substitution. Check W407 and W412. Check tubes V6101 and V6201 (para 14). If blower motor does not run, check voltage at TP9003. (See chart, *e* above.) If voltage is abnormal, check A9000. If voltage is normal, higher echelon repair is required.
	15	Remove tube V6101 from its socket (para 14).	Voltage measured should be +215	Check K406 by substitution.

	Step	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE		Turn POWER switch to LOW, press the microphone push-to-talk switch and measure the voltage at V6101 tube socket, terminal 7. Turn POWER switch to HIGH, press the microphone push-to-talk switch, and measure the voltage at V6101 tube socket, terminal 7.	volts dc with POWER switch at LOW and +275 volts dc with POWER switch at HIGH.	
	16	Replace tube V6101 in its socket (para 14). Tune the RT-524/VRC and the nearby receiver to a band A channel. Press the microphone push-to-talk switch and send a long voice test signal.	Receiver section of RT-524/VRC mutes and blower motor runs; test signal is heard loud and clear at nearby receiver.	Check FL401 by substitution. Check W410 and W411.
	17	Turn SQUELCH switches on RT-524/VRC and nearby receiver to NEW ON. Press the microphone push-to-talk switch and send a long voice test signal.	Receiver section of RT-524/VRC mutes and blower motor runs; CALL indicator lights, and test signal is heard loud and clear at nearby receiver.	Check A8500.
STOP	18	Turn POWER switch to OFF BREAKER-RESET.	RT-524/VRC stops operating.	

g. Checklist for Antenna AT-912/VRC.

Note: Parts removal and replacement for the AT-912/VRC are contained in paragraph 19.

	Step	Action	Normal indication	Corrective measures
PREPARATORY	1	Turn receiver-transmitter POWER switch to OFF.		
	2	Mount receiver-transmitter on MT-1029/VRC (para 4).		
	3	Connect antenna to MX-2799/VRC (para 5).		
	4	Connect CG-1773/U and CX-4722/U cables from connectors J552 and J551 on MX-2799/VRC to ANT and ANT CONT connectors on the receiver-transmitter.		
	5	Connect audio accessories to receiver-transmitter RETRANSMIT-R/W and SPKR connectors.		
	6	Turn receiver-transmitter SQUELCH switch to OLD OFF. Set up a nearby receiver to receive signals transmitted by the receiver-transmitter on the channels given in the steps below.		

	Step	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE	7	Tune the receiver-transmitter to 31.50 mc. Press the microphone push-to-talk switch and send a long voice test signal.	Receiver section of receiver-transmitter mutes and blower motor runs; test signal is heard loud and clear at nearby receiver.	Check CG-1773/U and CX-4722/U cables by substitution. Check antenna sections by substitution. Check K551 by substitution. Check A560 by substitution.
	8	Tune the receiver-transmitter to 35.00 mc. Press the microphone push-to-talk switch and send a long voice test signal.	Same as step 7	Check A570 by substitution. Check CX-4722/U cable by substitution.
	9	Tune the receiver-transmitter to 39.50 mc. Press the microphone push-to-talk switch and send a long voice test signal.	Same as step 7	Check A580 by substitution. Check CX-4722/U cable by substitution.
	10	Tune the receiver-transmitter to 44.75 mc. Press the microphone push-to-talk switch and send a long voice test signal.	Same as step 7	Check A590 by substitution. Check CX-4722/U cable by substitution.
	11	Tune the receiver-transmitter to 50.25 mc. Press the microphone push-to-talk switch and send a long voice test signal.	Same as step 7	Check A600 by substitution. Check CX-4722/U cable by substitution.
	12	Tune the receiver-transmitter to 54.50 mc. Press the microphone push-to-talk switch and send a long voice test signal.	Same as step 7	Check K551 by substitution. Check A610 by substitution. Check CX-4722/U cable by substitution.
	13	Tune the receiver-transmitter to 58.00 mc. Press the microphone push-to-talk switch and send a long voice test signal.	Same as step 7	Check A620 by substitution.
	14	Tune the receiver-transmitter to 62.50 mc. Press the microphone push-to-talk switch and send a long voice test signal.	Same as step 7	Check A630 by substitution.
	15	Tune the receiver-transmitter to 67.75 mc. Press the microphone push-to-talk switch and send a long voice test signal.	Same as step 7	Check A640 by substitution.
	16	Tune the receiver-transmitter to 73.25 mc. Press the microphone push-to-talk switch and send a long voice test signal.	Same as step 7	Check A650 by substitution.
STOP	17	Turn receiver-transmitter POWER switch to OFF.	Receiver-transmitter stops operating.	

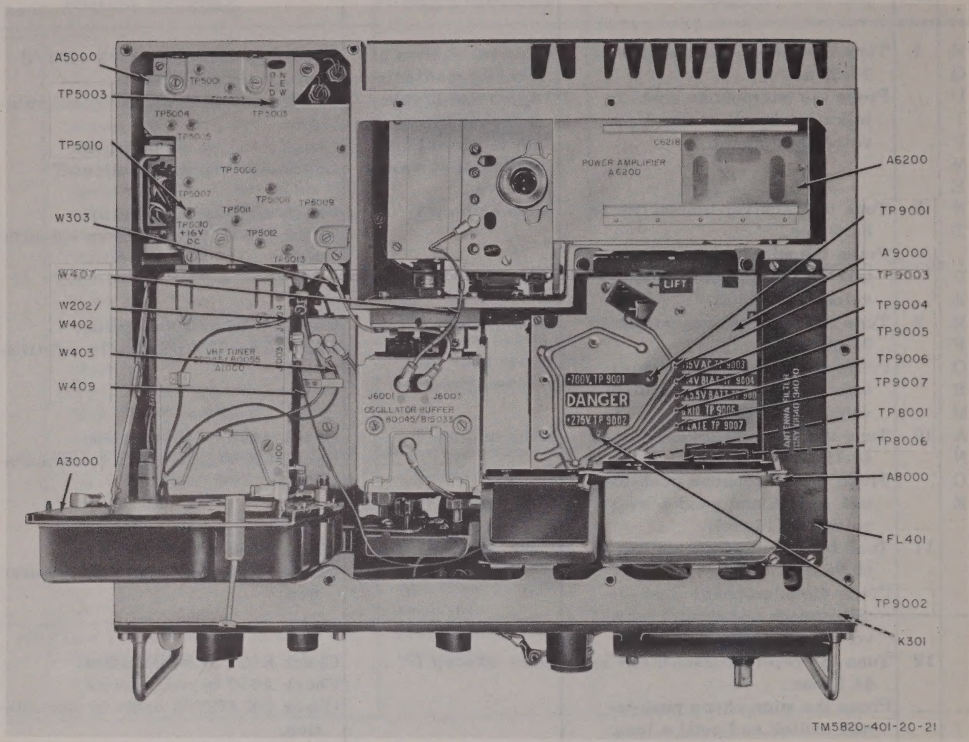

Figure 21. Receiver-Transmitter, Radio, RT-524/VRC, top cover removed and assemblies A3000 and A8000 raised.

h. Checklist for Amplifier, Audio Frequency AM-1780/VRC.

Note: Parts removal and replacement procedures for the AM-1780/VRC are contained in paragraph 20.

	Step	Unit	Action	Normal indication	Corrective measures
PREPARTORY	1	AM-1780/VRC ...	Turn MAIN POWER switch to OFF, set POWER CKT BKR control to OFF, turn INT ACCENT switch to OFF, and turn RADIO TRANS switch to CDR + CREW.		
	2	AM-1780/VRC ...	Connect all cables to the AM-1780/VRC (para 5).		
EQP. PRF.	3	AM-1780/VRC ...	Turn MAIN PWR switch to NORM and set POWER CKT BKR control to ON.	POWER lamp lights; proceed to step 6 if lamp lights.	If POWER CKT BKR control moves to OFF, reset it to ON. If it moves to OFF again, higher echelon repair is required. Replace POWER lamp.

	Step	Unit	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE					Remove Special Purpose Cable Assembly CX-4723/U from connector J501 and measure voltage between terminals A and B of the cable. Normal indication is 20 to 30 volts dc. If above indication is normal, higher echelon repair is required. If no voltage indicated in above measurement, check CX-4723/U by substitution. Check MT-1029/VRC by substitution.
	4	Commander's box.	Set up a nearby receiver to receive signals transmitted by receiver-transmitter A1. Press the push-to-talk switch of the microphone at connector J802 and send a long voice test signal.	Test signal is heard loud and clear.	Check audio accessory at connector J802 by substitution. Check commander's box (*j* below). Check CX-4723/U by substitution.
	5	Crew box	Press the push-to-talk switch of the microphone at connector J802 and send a long voice test signal.	Test signal is heard loud and clear.	Check audio accessory at connector J802 by substitution. Check crew box (*j* below). Check CX-4723/U by substitution.
	6	AM-1780/VRC...	Turn RADIO TRANS switch to CDR ONLY.		
	7	Commander's box.	Repeat step 4	Same as step 4	Same as step 4.
	8	Crew box	Repeat step 5	Test signal is not heard.	Higher echelon repair required.
	9	AM-1780/VRC...	Turn RADIO TRANS switch to LISTENING SILENCE.		
	10	Commander's box.	Repeat step 4	Test signal is not heard.	Higher echelon repair required.
	11	Crew box	Repeat step 5	Test signal is not heard.	Higher echelon repair required.
	12	AM-1780/VRC...	Turn RADIO TRANS switch to CDR + CREW. Turn INT ACCENT switch ON.		
	13	Crew box	Have operator at commander's box stand by to receive intercom signals. Press the push-to-talk switch of the microphone at connector J803 (yellow mark) and speak into the microphone.	Test intercom signal is heard loud and clear.	Check audio accessory at connector J803 by substitution. Check crew box (*j* below). Check CX-4723/U by substitution. Check K501 and K502 by substitution. Check A250. Check A520.

	Step	Unit	Action	Normal indication	Corrective measures
EQUIP. PERF.	14	Commander's box.	Have operator at crew box stand by to receive intercom signals. Press the push-to-talk switch of the microphone at connector J803 (yellow mark) and speak into the microphone.	Test intercom signal is heard loud and clear.	Check audio accessory at connector J803 by substitution. Check commander's box (*j* below). Check CX-4723/U by substitution. Check K501, K502, and K503 by substitution. Check A250. Check A520.
	15	Commander's box.	While continuing to talk on the intercom lines, arrange to receive a radio signal from a distant transmitter.	Operator at crew box hears both radio and intercom signals with intercom signals sounding louder.	Check CX-4723/U by substitution.
STOP	16	AM-1780/VRC...	Turn MAIN PWR switch to OFF.	AM-1780/VRC stops operating.	

i. Checklist for Controls, Intercommunication Set C-2296/VRC and C-2297/VRC.

Note: Parts removal and replacement procedures for the C-2296/VRC and C-2297/VRC are contained in paragraph 20.

	Step	Unit	Action	Normal indication	Corrective measures
PREPARATORY	1	AM-1780/VRC...	Turn RADIO TRANS switch to CDR + CREW, set POWER CKT BKR control to OFF, and turn MAIN PWR switch to OFF.		
	2	Receiver-transmitter A1 and A2 and receivers B and C (depending on the radio set being checked).	Turn SQUELCH switches to OFF.		
	3	C-2297/VRC.....	Turn MONITOR switch to INT ONLY.		
	4	C-2297/VRC.....	Connect required cables between AM-1780/VRC and C-2297/VRC (para 5).		
	5	C-2297/VRC.....	Connect audio accessories to connectors J902 and J903.		
	6	C-2296/VRC.....	Connect field wire from field telephone to LINE binding posts.		
	7	C-2296/VRC.....	Connect required cables between C-2297/VRC and C-2296/VRC (para 5).		
	8	AM-1780/VRC....	Set POWER CKT BKR control to ON and turn MAIN PWR switch to NORM.		

	Step	Unit	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE	9	C-2297/VRC.....	Have second operator stand by at C-2298/VRC. Press the push-to-talk switch of the microphone at connector J903 (yellow mark) and send a long voice test signal.	Intercom test signal is heard loud and clear.	Check audio accessory at connector J903 by substitution. Check A80. Check cable between connector J904 and the AM-1780/VRC by substitution.
	10	C-2297/VRC.....	Second operator at C-2298/VRC: Press the push-to-talk switch of microphone at connector J803 (yellow mark) and send a long voice test signal.	Intercom test signal is heard loud and clear through audio accessory at connector J903.	Check audio accessory at connector J903 by substitution.
	11	C-2297/VRC.....	As second operator continues to speak, turn VOLUME control back and forth.	Loudness of signal increases and decreases smoothly.	Higher echelon repair required.
	12	C-2297/VFC.....	Press the push-to-talk switch of the microphone at connector J902 and send a long voice test signal.	Intercom test signal is heard loud and clear.	Check audio accessory at connector J902 by substitution.
	13	C-2297/VRC.....	Same as step 10.....	Intercom test signal is heard loud and clear through audio accessory at connector J902.	Check audio accessory at connector J902 by substitution.
	14	C-2297/VRC.....	Turn MONITOR switch to ALL, A, B, and C, in that order.	Rushing noise is heard through audio accessory at connector J902 for each position of MONITOR switch.	Check cable between the AM-1780/VRC and connector J904 by substitution.
	15	C-2297/VRC.....	Set up a nearby receiver to receive signals transmitted by receiver-transmitter A1. Turn MONITOR switch to ALL. Press the push-to-talk switch of the microphone at connector J902 and send a long voice test signal.	Test signal is heard loud and clear.	Replace cable between connector J904 and the AM-1780/VRC by substitution.
	16	C-2297/VRC.....	Turn MONITOR switch to A. Press the push-to-talk switch of the microphone at connector J902 and send a long voice test signal.	Test signal is heard loud and clear.	Higher echelon repair required.
	17	C-2297/VRC.....	Turn MONITOR switch to B. Press the push-to-talk switch of the microphone at connector J902 and send a long voice test signal.	Test signal is heard loud and clear.	Higher echelon repair required.

	Step	Unit	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE	18	C-2297/VRC	Set up a nearby receiver to receive signals transmitted by receiver-transmitter A2. Turn MONITOR switch to C. Press push-to-talk switch of the microphone at connector J902 and send a long voice test signal.	Test signal is heard loud and clear.	Check cable between connector J904 and the AM-1780/VRC by substitution.
	19	C-2296/VRC	Second operator (at C-2296/VRC): press the Handset H-207/VRC push-to-talk switch.	External lamp connected to connector J62 lights. EXT indicator on C-2297/VRC lights.	Replace indicator. Check Special Purpose Cable Assembly CX-7621/V by substitution. Check H-207/VRC by substitution. Check cable between connectors J61 and J901 by substitution. Replace EXT indicator lamp.
	20	C-2297/VRC	While second operator at C-2296/VRC holds the H-207/VRC push-to-talk switch pressed, turn SIG-EXT-OFF switch to EXT.	External lamp connected to connector J62 goes out. EXT lamp on C-2297/VRC remains lighted.	Higher echelon repair required.
	21	C-2296/VRC	Second operator: press the H-207/VRC push-to-talk switch and send a long voice test signal.	Intercom test signal is heard lound and clear through audio accessory at connector J903 (yellow mark) on C-2297/VRC.	Check H-207/VRC by substitution. Check cable between connectors J61 and J901 by substitution.
	22	C-2297/VRC	Press the push-to-talk switch of the microphone at connector J903 (yellow mark) and send a long voice test signal.	Intercom test signal is heard loud and clear on H-207/VRC. at C-2296/VRC.	Check H-207/VRC by substitution. Check cable between connectors J61 and J901 by substitution.
	23	C-2296/VRC	Second operator: while operator continues to speak, turn VOLUME control back and forth.	Loudness of signal increases and decreases smoothly.	Higher echelon repair required.
	24	C-2296/VRC	Set up a nearby receiver to receive a signal transmitted by receiver-transmitter A2. Second operator: hold the RAD TRANS-INT switch in RAD TRANS, press the H-207/VRC push-to-talk switch and send a long voice test signal.	Test signal is heard loud and clear.	Check cable between connectors J61 and J901 by substitution.
	25	C-2296/VRC	Second operator: speak into field telephone.	Second operator's intercom signal is heard loud and clear through audio accessory at connector J903 (yellow	Check cable between connectors J61 and J901 by substitution.

	Step	Unit	Action	Normal indication	Corrective measures
				mark) on C-2297/VRC.	
EQUIP. PERF.	26	C-2297/VRC.....	Momentarily hold SIG-EXT-OFF switch to SIG.	External lamp connected to connector J62 of C-2296/VRC and EXT indicator of C-2297/VRC light.	Higher echelon repair required.
	27	C-2297/VRC.....	Turn SIG-EXT-OFF switch to OFF. Turn MONITOR switch to ALL.	EXT indicator goes out.	Higher echelon repair required.
STOP	28	AM-1780/VRC...	Set MAIN PWR switch to OFF.	AM-1780/VRC, C-2296/VRC, and C-2297/VRC stop operating.	

j. Checklist for Control, Intercommunication Set C-2298/VRC.

	Step	Unit	Action	Normal indication	Corrective measures
PREPARATORY	1	AM-1780/VRC...	Turn RADIO TRANS switch to CDR + CREW, set POWER CKT BKR control to OFF, and turn MAIN PWR switch to OFF.		
	2	Receiver-transmitters A1 and A2 and receivers B and C (depending on the radio set being checked.	Turn SQUELCH switches to OFF.		
	3	C-2298/VRC.....	Turn MONITOR switch to INT ONLY.		
	4	C-2298/VRC.....	Connect required cable between C-2298/VRC and AM-1780/VRC (para 5).		
	5	C-2298/VRC.....	Connect audio accessories to connectors J802 and J803.		
	6	AM-1780/VRC...	Set POWER CKT BRK control to ON and turn MAIN PWR switch to NORM.		
EQUIP. PERF.	7	C-2298/VRC.....	Have second operator stand by at second C-2298/VRC. Press the push-to-talk switch of the microphone at connector J803 (yellow mark) and send a long voice test signal.	Test intercom signal is heard loud and clear.	Check audio accessory at connector J803 by substitution. Check A80 (para 20). Check CX-4723/U by substitution.
	8	C-2298/VRC.....	Second operator: press push-to-talk switch of microphone at connector J803 (yellow mark) and send long voice test signal.	Test intercom signal is heard loud and clear through audio accessory at connector J803 of first C-2298/VRC.	Check audio accessory at connector J803 by substitution.

	Step	Unit	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE	9	C-2298/VRC	As second operator continues to speak, turn VOLUME control back and forth.	Loudness of signal increases and decreases smoothly.	Higher echelon repair required.
	10	C-2298/VRC	Press push-to-talk switch of microphone at connector J802 and send long voice test signal.	Test intercom signal is heard loud and clear.	Check audio accessory at connector J802 by substitution.
	11	C-2298/VRC	Same as step 8	Test intercom signal is heard loud and clear through audio accessory at connector J802.	Check audio accessory at connector J802 by substitution.
	12	C-2298/VRC	Turn MONITOR switch to ALL, A, B, and C, in that order.	Rushing noise is heard through audio accessory at connector J802 for each position of MONITOR switch	Check CX-4723/U by substitution.
	13	C-2298/VRC	Set up a nearby receiver to receive signals transmitted by receiver-transmitter A1. Turn MONITOR switch to ALL. Press the push-to-talk switch of the microphone at connector J802 and send a long voice test signal.	Test signal is heard loud and clear.	Check CX-4723/U by substitution.
	14	C-2298/VRC	Turn MONITOR switch to A. Press the push-to-talk switch on the microphone at connector J802 and send a long voice test signal.	Test signal is heard loud and clear.	Higher echelon repair required.
	15	C-2298/VRC	Turn MONITOR switch to B. Press the push-to-talk switch of the microphone at connector J802 and send a long voice test signal.	Test signal is heard loud and clear.	Higher echelon repair required.
	16	C-2298/VRC	Set up a nearby receiver to receive signals transmitted by receiver-transmitter A2. Turn MONITOR switch to C. Press the push-to-talk switch of the microphone at connector J802 and send a long voice test signal.	Test signal is heard loud and clear.	Check CX-4723/U by substitution.
STOP	17	AM-1780/VRC ...	Turn MAIN PWR switch to OFF.	AM-1780/VRC and C-2298/VRC to stop operating.	

k. Checklist for Control, Radio Set C-2299/VRC.

Note: This procedure is required for a complete check of the C-2299/VRC. When the C-2299/VRC is connected to an AM-1780/VRC (para 5), performance of step 8 only is possible.

	Step	Unit	Action	Normal indication	Corrective measures
PREPARATORY	1	C-2299/VRC.....	Connect required cables between C-2299/VRC and connectors J22 on the MT-1029/VRC's associated with receiver-transmitters A1 and A2.		
	2	Receiver-transmitters A1 and A2.	Turn POWER switches to ON and SQUELCH switches to OFF. Tune receiver-transmitters to different channels.		
	3	C-2299/VRC.....	Turn RAD TRANS switch to 1 and RETRANS switch to OFF. Connect audio accessories to connectors J703 and J704.		
EQUIPMENT PERFORMANCE	4	C-2299/VRC.....	Listen to audio accessory at connector J703 and turn VOLUME control back and forth.	Rushing noise is heard. Loudness of noise increases and decreases smoothly.	Check audio accessory at connector J703 by substitution. Check CX-4723/U between connectors J701 and J22 by substitution.
	5	C-2299/VRC.....	Set up a nearby receiver to receive a signal transmitted by receiver-transmitter A1. Press the push-to-talk switch of the microphone at connector J703 and send a long voice test signal.	Test signal is heard loud and clear.	Check audio accessory at connector J703 by substitution. Check A80 (para 20). Check CX-4723/U between connectors J701 and J22 by substitution.
	6	C-2299/VRC.....	Turn RAD TRANS switch to 2. Listen to audio accessory at connector J704.	Rushing noise is heard.	Check audio accessory at connector J704 by substitution. Check CX-4723/U between connectors J702 and J22 by substitution.
	7	C-2299/VRC.....	Set up a nearby receiver to receive a signal transmitted by receiver-transmitter A2. Press the push-to-talk switch of the michrophone at connector J704 and send a long voice test signal.	Test signal is heard loud and clear.	Check audio accessory at connector J704 by substitution. Check CX-4723/U between connectors J702 and J22 by substitution.
	8	C-2299/VRC.....	Have operators stand by at two distant receiver-transmitters with one tuned to the receiver-transmitter A1 channel and the other to the receiver-transmitter A2 channel.	Distant stations communicate with each other. Both stations can be heard through audio accessories at connector J703 or	Check CX-4723/U between connector J701 and/or J702 and connector J22 by substitution. Check K405 in the receiver-transmitters (para 17).

	Step	Unit	Action	Normal indication	Corrective measures
EQP. PRF.			Arrange for communications to begin after a short time interval. During the interval, turn the RETRANS switch ON.	J704 by switching RAD TRANS switch between 1 and 2.	
	9	C-2299/VRC	Turn RETRANS switch OFF.	Distant receiver-transmitters cannot communicate with each other.	Higher echelon repair required.
STOP	10	Receiver-transmitters A1 and A2.	Turn POWER switches to OFF.	Receiver-transmitters A1 and A2 and C-2299/VRC stop operating.	

1. Checklist for Control, Frequency Selector C-2742/VRC.

	Step	Unit	Action	Normal indication	Corrective measures
PREPARATORY	1	RT-246/VRC	Turn POWER switch to OFF.		
	2	C-2742/VRC (first)	Connect required cable between C-2742/VRC and RT-246/VRC (para 5).		
	3	C-2742/VRC (second)	Connect cable between second and first C-2742/VRC's (para 5).		
	4	RT-246/VRC	Turn POWER switch to REMOTE.		
EQUIPMENT PERFORMANCE	5	C-2742/VRC (first)	Turn PWR switch to LO. Press SW switch up.	CONTROL indicator lights.	Replace CONTROL indicator lamp. Check K71 by substitution (para 20). Check Special Purpose Cable Assembly CX-7059/VR between connector J71 and REMOTE connector on RT-246/VRC by substution. tion.
	6	C-2742/VRC (first)	Turn PWR switch to OFF.	CONTROL indicator goes out.	Higher echelon repair required.
	7	C-2742/VRC (first)	Turn PWR switch to LO.	CONTROL indicator lights.	Check CX-7059/VR between connector J71 and REMOTE connector on RT-2461/VRC by substutition.
			Turn CHAN SEL switch to its next position.	Channel on RT-246/VRC changes to the preset channel. associated with this position.	
	8	C-2742/VRC (f irst)	Repeat step 7 for other nine positions of the CHAN SEL switch.	Same as step 7.	Same as step 7.
	9	C-2742/VRC (second)	Turn PWR switch to LO. Press SW switch up.	CONTROL indicator on second C-2742/VRC lights and goes out on first C-2742/VRC.	If CONTROL indicator of the first C-2742/VRC does not go out, check K71 by substitution (para 20). Check CX-4723/U between connector J71 of the second C-2742/VRC and connector J72 of the first C-2742/VRC by substitution.

	Step	Unit	Action	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE					If CONTROL indicator of the first C-2742/VRC goes out, but CONTROL indicator of the second does does not light, replace CONTROL indicator lamp. Check K71 of the second C-2742/VRC by substitution (para 20). Check CX-4723/U between connector J71 of the second C-2742/VRC and connector J72 of the first C-2742/VRC by substitution.
	10	C-2742/VRC (second)	Turn PWR switch to OFF.	CONTROL indicator remains lighted.	Higher echelon repair required.
	11	C-2742/VRC (second)	Turn PWR switch to LO and turn CHAN SEL switch to its next position.	Channel on RT-246/VRC changes to the preset channel associated with this position.	Check CX-4723/U between connector J71 of the second C-2742/VRC and connector J72 on the first C-2742/VRC by substitution.
	12	C-2742/VRC (second)	Repeat step 11 for other nine positions of the CHAN SEL switch.	Same as step 11.	Same as step 11.
	13	C-2742/VRC (first)	Press SW switch up.	CONTROL indicator of the first C-2742/VRC lights and CONTROL indicator of the second C-2742/VRC goes out.	If CONTROL indicator of the second C-2742/VRC does not go out, check K71 by substitution (para 20). Check CX-4723/U between connector J71 of the second C-2742/VRC and connector J72 of the first C-2742/VRC by substitution. If CONTROL indicator of the first C-2742/VRC does not light, higher echelon repair required.
STOP	14	RT-246/VRC	Turn POWER switch to OFF.	RT-246/VRC and C-2742/VRC's stop operating.	

Section III. REPAIRS

14. Tube Testing and Replacement

Note: Until a module test set is made available for organizational maintenance of the equipment, all modules should be tested by substitution (para 15*c*).

The only tubes which may be tested and replaced at the organizational maintenance level are tubes V6101 and tube V6201 in the receiver-transmitter. When trouble occurs in the transmitter section of a receiver-transmitter, check all cabling and connections before removing either tube V6101 or V6102. If tube failure is suspected, use the procedures below to check the tubes.

a. Tube V6101 (fig. 22). Tube V6101 may be checked by either substitution or with a tube tester. When testing tube V6101 with a tube tester, discard the tube only if its defect is obvious or if the tube tester shows it to be defective. Do not discard the tube if it tests at or near its minimum test limit on the tube tester. When testing tube V6101 by substitution, replace it with a new one. If the receiver-transmitter remains inoperative, remove the new tube and put back the original tube.

(1) *Tube V6101 removal.*

(a) Loosen 11 captive screws and

remove the top cover of tne receiver-transmitter.

(b) Spring open the tube shield clamp and remove it.

(c) Remove the tube shield.

(d) Pull tube V6101 straight out of the socket.

Caution: **Do not rock or rotate the tube when removing it from its socket; pull it straight out with a tube puller.**

(2) *Tube V6101 replacement.*

(a) Plug the tube into its socket.

(b) Replace the tube shield.

(c) Relace the tube shield clamp.

(d) Replace the top cover and tighten the 11 captive screws.

b. Tube V6201 (fig. 22). Tube V6201 must be checked by substitution. When checking tube V6201, replace it with a new one. If the receiver-transmitter remains inoperative, remove the new tube and put back the original tube.

Caution: **When operating, tube V6201 gets very hot. Be sure that the tube is cool enough to handle before removing it. When working in the area of tube V6201, be careful not to damage the heatsink block. If the heatsink block is broken, do not substitute any other material. Damage to tube V6201 will result.**

(1) *Tube V6201 removal.*

(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.

(b) Remove two screws and remove the assembly A6200 (fig. 20 or 21) cover.

(c) Remove two screws from the heatsink block.

(d) Pull out the tube with its heatsink block.

(e) Loosen the yoke screw on the heatsink block and pull out the tube.

(2) *Tube V6201 replacement.*

(a) Plug the tube into the heatsink block in the side opposite the marking "V6201". Do not tighten the yoke screw.

(b) Plug the tube into its socket; align the holes on the heatsink block with the holes on the mating piece.

(c) Replace and tighten the two screws in the heatsink block.

(d) Tighten the yoke screws.

(e) Replace the assembly A6200 cover and replace and tighten the two screws that secure it (fig. 20 or 21).

(f) Replace the top cover and tighten the 11 captive screws.

15. Repair Information

a. In addition to replacement of tubes, repairs made at the organizational level include replacing modules, relays, fuses, and coaxial cables. The organizational repairman should not attempt to replace

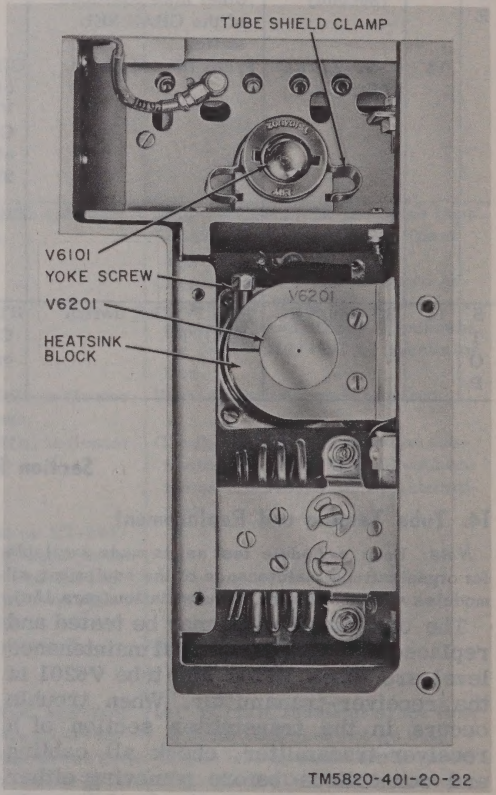

Figure 22. Tube V6101 and tube V6201, locations.

any parts other than those called out in this section, and in no case attempt to take apart the front panels. When making repairs, follow the instructions listed in the applicable paragraph listed below.

Unit	Paragraph
R–442/VRC	16
RT–524/VRC	17
RT–246/VRC	17
MT–1029/VRC and MT–1898/VRC	18
MX–2799/VRC	19
System control boxes	20

b. Figures 15 and 19 show the undersides of typical assemblies (A4000 and A5000 are shown). Note the shields and the snap slides that hold them to the main circuit boards. When putting a shield back on, be sure to push the snap slides all the way in.

Note: Until a module test set is made available for organizational maintenance of the equipment, all modules should be tested by substitution. Refer to SB 11–525 for standard procedures on disposition of defective modules.

c. When testing a module by substitution, replace it with a new one. If the radio set still fails to operate properly, remove the new module and put back the original. Repeat this procedure with each suspected module until the defective module is located.

d. When replacing parts, be sure that the connectors mate properly. When replacing modules, turn the holddown screws tight to make a good ground connection.

e. When removing or replacing component covers, be careful not to damage the cover gaskets.

16. Parts Removal and Replacement in Receiver, Radio R-442/VRC

Repairs made to the R-442/VRC at the organizational level are limited to replacing the parts listed below. To remove and replace parts, refer to the applicable subparagraphs in this paragraph and illustrations listed in the chart below.

Part	Subparagraph	Fig. No.
Assembly A1600	*e*	25
Assembly A2100	*c*	24
Assembly A3000	*a*	23
A3100		
A3200		
A3300		
A3400		
A3500		
A3600		
A3700		
K3001		
Assembly A4000	*d*	12
A4100		
A4200		
A4300		
FL4001		
FL4002		
Assembly A5000	*b*	24
A5100		
A5200		
A5300		
K5001		
K5002		
Cable W203	*g*	25, 19
Cable W204	*f*	19
Cable W202/W402	*f*	19
Knobs	*h*	

a. Assembly A3000 (fig. 23). Assembly A3000 includes A3100 through A3700 and relay K3001.

(1) Remove parts from assembly A3000 as follows:

(a) Loosen six captive screws and remove the top cover of the R-442/VRC.

(b) To remove relay K3001, pull out the relay.

(c) Loosen the captive screw on assembly A3000 and swing the assembly out until the brace locks.

(d) To remove assemblies A3100 through A3700, unsnap five snap slides, remove the shield, loosen the module holddown screws, and pull off the assemblies.

(2) Replace parts on assembly A3000 as follows:

(a) To replace assemblies A3100 through A3700, plug the modules onto the main circuit board, tighten the module holddown screws, replace the shield, and fasten the snap slides.

(b) Release the brace on assembly A3000, lower the assembly into

the case, and tighten the captive screw that secures it.

(c) To replace relay K3001, plug the relay into its socket.

(d) Replace the top cover and tighten the six captive screws.

b. Assembly A5000 (fig. 24). Assembly A5000 includes assemblies A5100, A5200, and A5300, and relays K5001 and K5002.

(1) Remove parts from assembly A5000 as follows:

(a) Loosen six captive screws and remove the top cover of the R-442/VRC.

(b) Loosen the captive screw on assembly A3000 and swing the assembly out until the brace locks (fig. 23).

(c) Loosen three captive screws on assembly A5000 (fig. 19).

(d) Pull up on the handle near the connector on assembly A5000 and remove the assembly.

(e) To remove relays K5001 and K5002, loosen the clamp holddown screw, remove the relay holddown clamp, and pull out the relays.

(f) To remove assemblies A5100, A5200, and A5300, unsnap four snap slides, remove the shield, loosen the module holddown screws, and pull off the assemblies.

(2) Replace parts on assembly A5000 as follows:

(a) To replace assemblies A5100, A5200, and A5300, plug the modules onto the main circuit board, tighten the module holddown screws, replace the shield, and fasten the snap slides.

(b) To replace relays K5001 and K5002, plug the relay into its socket, replace the relay holddown clamp, and tighten the clamp holddown screw.

(c) Replace assembly A5000 and tighten the three captive screws that secure it.

(d) Release the brace on assembly A3000, lower the assembly into

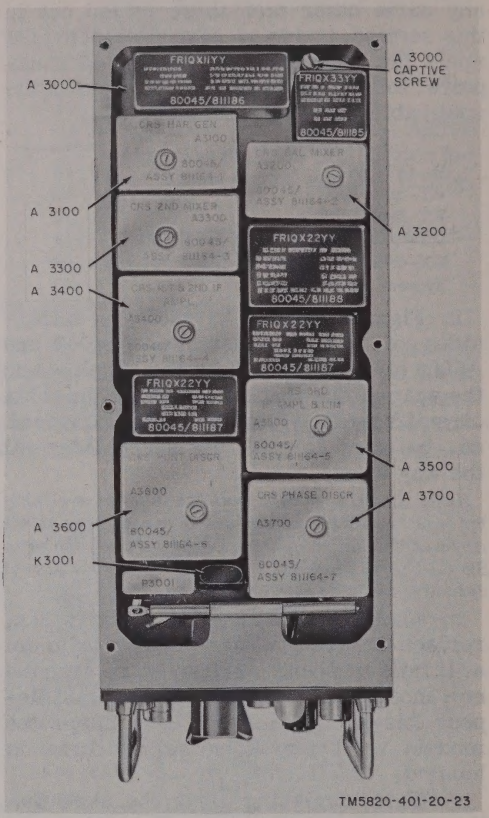

Figure 23. Receiver, Radio R-442/VRC, top cover removed.

the case, and tighten the captive screw that secures it.

(e) Replace the top cover and tighten the six captive screws.

c. Assembly A2100 (fig. 24).

(1) Remove assembly A2100 as follows:

(a) Loosen six captive screws and remove the top cover of the R-442/VRC.

(b) Loosen the captive screw on assembly A3000 (fig. 23) and swing the assembly out until the brace locks.

(c) Loosen three captive screws on assembly A5000.

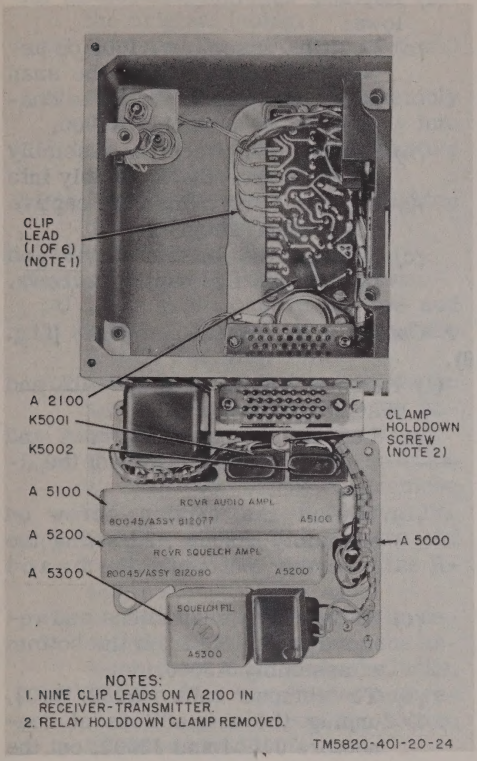

Figure 24. Assembly A5000 and assembly A2100, location.

(d) Pull up on the handle near the connector on assembly A5000 and remove the assembly.

(e) Pull off the six clip leads on assembly A2100.

Note: The dots beside the assembly terminals correspond to the color-coded leads connected to them.

(f) Remove three screws (two on one end, one on the other) from assembly A2100.

(g) Remove assembly A2100.

(2) Replace assembly A2100 as follows:

(a) Position assembly A2100 in the case.

(b) Replace and tighten the three screws that secure assembly A2100.

(c) Replace the six clip leads on assembly A2100; observe the color code.

(d) Replace assembly A5000 and tighten the three captive screws that secure it.

(e) Release the brace on assembly A3000, lower the assembly into the case, and tighten the captive screw that secures it.

(f) Replace the top cover and tighten the six captive screws.

d. Assembly A4000 (fig. 12). Assembly A4000 includes assemblies A4100, A4200, and A4300 and filters FL4001 and FL4002.

(1) Remove parts from assembly A4000 as follows:

(a) Loosen six captive screws and remove the bottom cover of the R-442/VRC.

(b) Loosen two captive screws on assembly A4000, swing the assembly out, and lock the brace.

(c) To remove assemblies A4100, A4200, and A4300, unsnap four snap slides, remove the shield, loosen the module holddown screws, and pull off the assemblies.

(d) To remove filters FL4001 and FL4002, note their positions by the indicated operation (50 KC CHAN OPER or WIDE BAND OPER), remove the three and the five locknuts, respectively, and pull off the filters.

(2) Replace parts on assembly A4000 as follows:

(a) To replace filters FL4001 and FL4002, replace and tighten the locknuts. Be careful to replace filter FL4002 so that its indicated operation is the same as before it was removed.

(b) To replace assemblies A4100, A4200, and A4300, plug the modules onto the main circuit board, tighten the module holddown screws, replace the shield, and fasten the snap slides.

(c) Replace the brace on assembly A4000, lower the assembly into

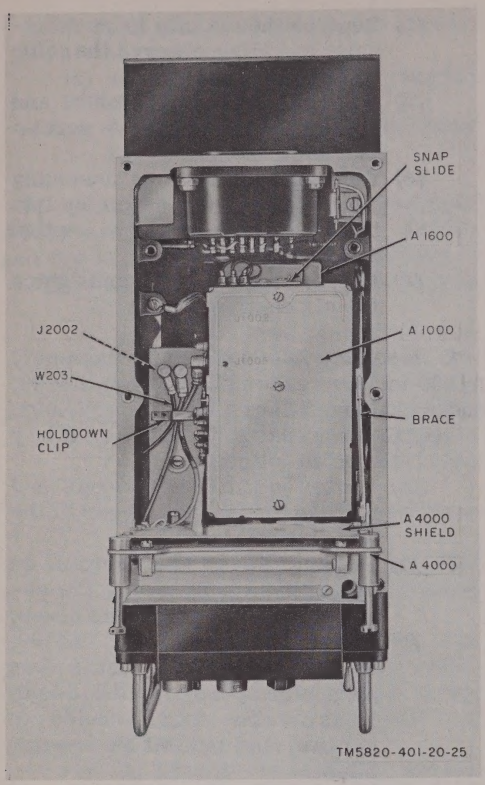

Figure 25. Receiver, Radio R-442/VRC, bottom cover removed and assembly A4000 raised.

the case, and tighten the captive screws that secure it.

(d) Replace the bottom cover and tighten the six captive screws.

e. *Assembly A1600* (fig. 25).

(1) Remove assembly A1600 as follows:

(a) Loosen six captive screws and remove the bottom cover of the R-442/VRC.

(b) Loosen two captive screws on assembly A4000, swing the assembly out, and lock the brace.

(c) To remove assembly A1600, unplug three connections on assembly A1000, unsnap the snap slide, and remove assembly A1600.

(2) Replace assembly A1600 as follows:

(a) Position assembly A1600 on assembly A1000, fasten the snap slide, and plug in the three connections on assembly A1000.

(b) Release the brace on assembly A4000, lower the assembly into the case, and tighten the captive screws that secure it.

(c) Replace the bottom cover and tighten the six captive screws.

f. *Cables W202/W402 and W204* (fig. 19).

(1) Remove cables W202/W402 and W204 as follows:

(a) Loosen six captive screws and remove the top cover of the R-442/VRC.

(b) Loosen the captive screw on assembly A3000 and swing the assembly out until the brace locks.

(c) Unsnap five snap slides and remove the shield from the bottom of assembly A3000.

(d) To remove cable W202/W402, unplug the connections at connectors J1004 and J3002, cut the lacing that dresses the cable, and remove the cable from the holddown clips.

(e) To remove cable W204, unplug the connections at connectors J2003 and J3701; cut the lacing that dresses the cable, and remove the cable from the holddown clips.

(2) Replace cables W202/W402 and W204 as follows:

(a) To replace cable W202/W402, plug the end of the cable marked "P1004" into connector J1004 and the end marked "P3002" into connector J3002. Route the cable through the holddown clips and duplicate the original lacing.

(b) To replace cable W204, plug the end of the cable marked "P2003" into connector J2003 and the end marked "P3701" into connector J3701. Route the cable through

the holddown clips and duplicate the original lacing.

(c) Replace the A3000 shield and fasten the snap slides.

(d) Release the brace on assembly A3000, lower the assembly into the case, and tighten the captive screw that secures it.

(e) Replace the top cover and tighten the six captive screws.

g. *Cable W203* (fig. 25 and 19).

(1) Remove cable W203 as follows:

(a) Loosen six captive screws and remove the bottom cover of the R-442/VRC (fig. 25).

(b) Loosen two captive screws on assembly A4000, swing the assembly out, and lock the brace.

(c) Unplug the cable W203 connection at connector J2002 and remove the cable from the holddown clip.

(d) Loosen six captive screws and remove the top cover of the R-442/VRC.

(e) Loosen the captive screw on assembly A3000 and swing the assembly out until the brace locks.

(f) Unsnap five snap slides and remove the shield from the bottom of assembly A3000.

(g) Unplug the cable W203 connection at connector J3301, cut the lacing that dresses the cable, and remove the cable from the holddown clips.

(2) Replace cable W203 as follows:

(a) Plug the end of the cable marked "P3301" into connector J3301. Route the cable through the holddown clips and duplicate the original lacing.

(b) Replace the A3000 shield and fasten the snap slides.

(c) Release the brace on assembly A3000, lower the assembly into the case, and tighten the captive screw that secures it.

(d) Replace the top cover and tighten the six captive screws.

(e) Plug the end of the cable marked "P2002" into connector J2002 (fig. 25). Route the cable through the holddown clip.

(f) Release the brace on assembly A4000, lower the assembly into the case, and tighten the captive screws that secure it.

(g) Replace the bottom cover and tighten the six captive screws.

h. *Knobs.*

(1) Remove the knobs from the R-442/VRC as follows:

(a) Remove the screw that secures the knob to the control shaft.

(b) Pull off the knob.

(2) Replace the knobs on the R-442/VRC as follows:

(a) Push the knob onto the control shaft.

(b) Replace and tighten the screw.

17. Parts Removal and Replacement in Receiver-Transmitters, Radio RT-246/VRC and RT-524/VRC

In addition to the replacement of tubes (para 14), repairs made to receiver-transmitters at the organizational level are limited to replacing the parts listed in the chart below. To remove and replace parts, refer to the applicable subparagraphs in this paragraph and illustrations listed in the chart below.

Part	Subparagraph	Fig. No. (RT-246/VRC)	Fig. No. (RT-524/VRC)
Assembly A1600	*l*	30	31
Assembly A2100	*h*	24	24
Assembly A3000	*a*	26	27
A3100			
A3200			
A3300			
A3400			
A3500			
A3600			
A3700			
K3001			
Assembly A4000	*k*	13	14
A4100			
A4200			
A4300			
FL4001			
FL4002			
Assembly A5000	d	24	24
A5100			
A5200			
A5300			
K5001			
K5002			

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Part	Subpar-agraph	Fig. No. (RT-246/VRC)	Fig. No. (RT-524/VRC)
Assembly A7000[a]	*f*	20	
Assembly A8000	*b*	26	27
A8100			
A8200			
A8300			
A8400			
A8500			
Assembly A9000	*e*	20, 28	21, 28
K9001			
K9002			
Filter FL401	*c*	26	27
Relay K401	*g*	29	29
Relay K402	*g*	29	29
Relay K403	*g*	29	29
Relay K404	*g*	29	29
Relay K405	*i*	13	14
Relay K406	*g*	29	29
Relays K7101 through K7111[a]	*j*	13	
Cable W202/W402	*n*	20	21
Cable W303	*o*	20, 30	21, 31
Cable W403	*n*	20	21
Cable W404	*o*	20, 30	21, 31
Cable W407	*m*	20	21
Cable W409	*n*	20	21
Cable W410	*p*	13, 29	14, 29
Cable W411	*p*	29	29
Cable W412	*p*	13, 31	14, 29
Knobs	*q*		

[a] RT-246/VRC only.

a. Assembly A3000. Assembly A3000 includes assemblies A3100 through A3700, and relay K3001 (RT-246/VRC, fig. 26; RT-524/VRC, fig. 27).

(1) Remove parts from assembly A3000 as follows:

(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.

(b) To remove relay K3001, pull out the relay.

(c) Loosen the captive screw on assembly A3000 and swing the assembly out until the brace locks.

(d) To remove assemblies A3100 through A3700, unsnap five snap slides, remove the shield, loosen the module holddown screws, and pull off the assemblies.

(2) Replace parts on assembly A3000 as follows:

(a) To replace assemblies A3100 through A3700, plug the modules onto the main circuit board, tighten the module holddown screws, replace the shield, and fasten the snap slides.

(b) Release the brace on assembly A3000, lower the assembly into the case, and tighten the captive screw that secures it.

(c) To replace relay K3001, plug the relay into its socket.

(d) Replace the top cover and tighten the 11 captive screws.

b. Assembly A8000. Assembly A8000 includes assemblies A8100 through A8500 (RT-246/VRC, fig. 26; RT-524/VRC, fig. 27).

(1) Remove parts from assembly A8000 as follows:

(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.

(b) Loosen the two captive screws on assembly A8000, swing the assembly out, and lock the brace.

(c) To remove assemblies A8100 through A8500, unsnap four snap slides, remove the shield, loosen the module holddown screws, and pull off the assemblies.

(2) Replace parts on assembly A8000 as follows:

(a) To replace assemblies A8100 through A8500, plug the modules onto the main circuit board, tighten the module holddown screws, replace the shield, and fasten the snap slides.

(b) Release the brace on assembly A8000, lower the assembly into the case, and tighten the captive screws that secure it.

(c) Replace the top cover and tighten the 11 captive screws.

c. Filter FL401 (RT-246/VRC, fig. 26; RT-524/VRC, fig. 27).

(1) Remove filter FL401 as follows:

(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.

(b) Loosen the two captive screws on assembly A8000, swing the assembly out, and lock the brace.

(c) Loosen the four captive screws

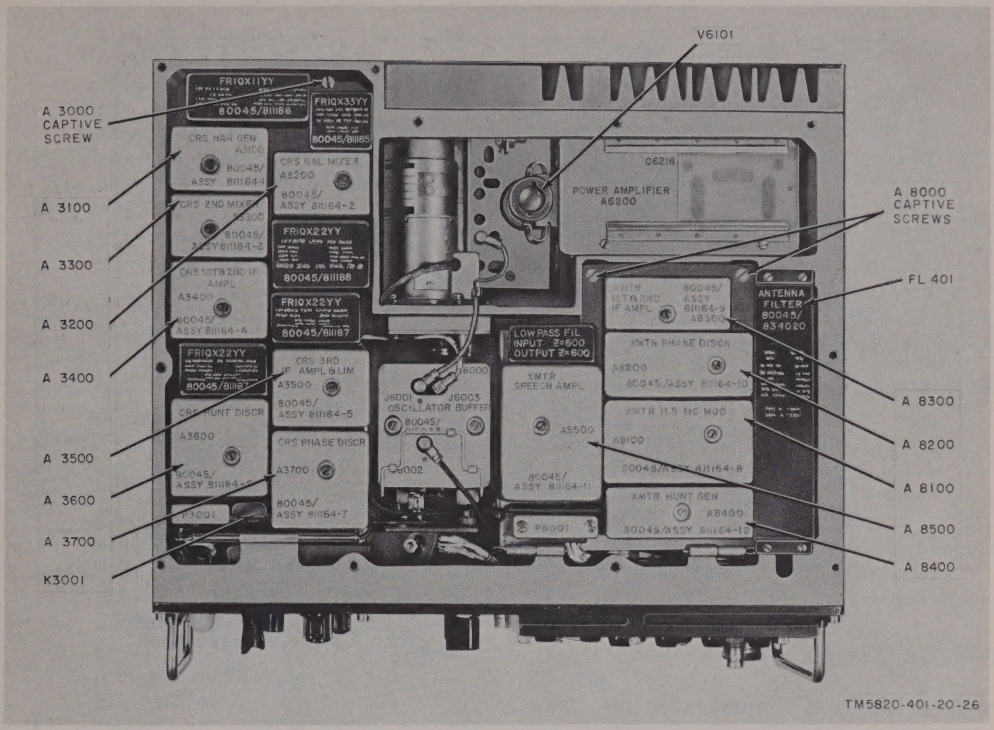

Figure 26. Receiver-Transmitter, Radio RT–246/VRC, top cover removed.

on filter FL401, pull out the filter, unplug the connections at connector FL401J1 and FL401J2 (fig. 29), and remove the filter.

(2) Replace filter FL401 as follows:

(a) Plug the end of cable W410 marked FL401P2 into connector FL401J2 and plug the end of cable W411 marked FL401P1 into connector FL401J1 on the filter (fig. 29).

(b) Position filter FL401 in the case and tighten the four captive screws that secure it.

(c) Release the brace on assembly A8000, lower the assembly into the case, and tighten the captive screws that secure it.

(d) Replace the top cover and tighten the 11 captive screws.

d. Assembly A5000. Assembly A5000 includes assemblies A5100, A5200, and A5300, and relays K5001 and K5002 (fig. 24).

(1) Remove parts from assembly A5000 as follows:

(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.

(b) Loosen the captive screw on assembly A3000 and swing the assembly out until the brace locks.

(c) Loosen three captive screws on assembly A5000.

(d) Pull up on the handle near the connector on assembly A5000 and remove the assembly.

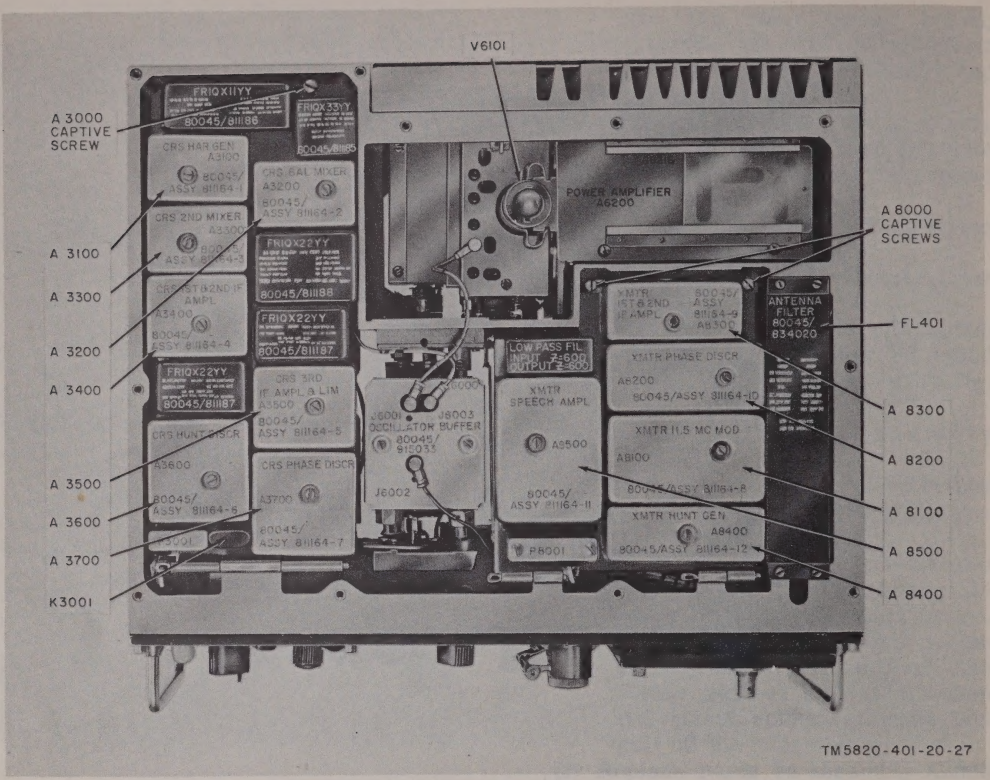

Figure 27. Receiver-Transmitter, Radio RT–524/VRC, top cover removed.

(e) To remove relays K5001 and K5002, loosen the clamp holddown screw, remove the relay holddown clamp, and pull out the relays.

(f) To remove assemblies A5100, A5200, and A5300, unsnap four snap slides, remove the shield, loosen the module holddown screws, and pull off the assemblies.

(2) Replace parts on assembly A5000 as follows:

(a) To replace assemblies A5100, A5200, and A5300, plug the modules onto the main circuit board, tighten the module holddown screws, replace the shield, and fasten the snap slides.

(b) To replace relays K5001 and K5002, plug the relays into their sockets, replace the relay holddown clamp, and tighten the clamp holddown screw.

(c) Replace assembly A5000 and tighten the three captive screws that secure it.

(d) Release the brace on assembly A3000, lower the assembly into the case, and tighten the captive screw that secures it.

(e) Replace the top cover and tighten the 11 captive screws.

e. Assembly A9000. Assembly A9000 contains relays K9001 and K9002 (fig. 28; RT-246/VRC, fig. 20; RT-524/VRC, fig. 21).

(1) Remove assembly A9000 as follows:
(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.
(b) Loosen the two captive screws on assembly A8000, swing the assembly out, and unfasten the brace to permit the assembly to swing out farther.
(c) Loosen the four captive screws on filter FL401, pull out the filter, unplug the connections at connectors FL401J1 and FL401J2, and remove the filter (fig. 29).
(d) Use a long, slender-bladed screwdriver to loosen the four captive screws on assembly A9000.
(e) Pull up on the lift rings on assembly A9000 and remove the assembly.
(f) To remove relays K9001 and K9002 (fig. 28), remove five screws from the top circuit board on assembly A9000, swing the circuit board open, and pull out the relays.

(2) Replace assembly A9000 as follows:
(a) To replace relays K9001 and K9002, plug the relays into their sockets, close the top circuit board, and replace and tighten the five screws on the circuit board.
(b) Replace assembly A9000 and tighten the four captive screws that secure it.
(c) Plug the end of cable W410 marked "FL401P2" into connector FL401J2 and plug the end of cable W411 marked "FL401P1" into connector FL401J1 on filter FL401 (fig. 29).
(d) Position filter FL401 in the case and tighten the four captive screws that secure it.
(e) Fasten the brace on assembly A8000, lower the assembly into the case, and tighten the captive screws that secure it.
(f) Replace the top cover and tighten the 11 captive screws.

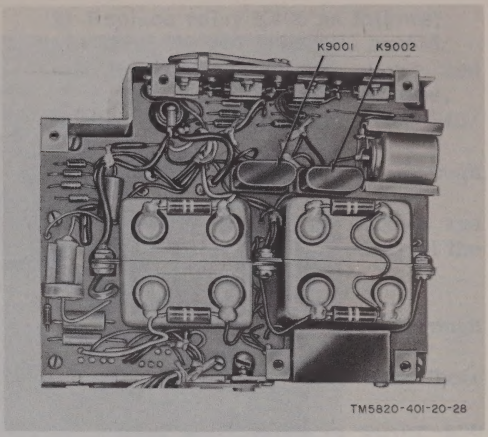

Figure 28. Assembly A9000, top circuit board raised.

f. Assembly A7000 (RT-246/VRC only) (fig. 20).
(1) Remove assembly A7000 as follows:
(a) Loosen 11 captive screws and remove the top cover of the RT-246/VRC.
(b) Loosen two captive screws on assembly A8000, swing the assembly out, and lock the brace.
(c) Loosen two captive screws on assembly A7000 and pull out the assembly.
(2) Replace assembly A7000 as follows:
(a) Plug assembly A7000 into its receptacle and tighten the two captive screws that secure it.
(b) Unlock the brace on assembly A8000, lower the assembly into the case, and tighten the captive screws that secure it.
(c) Replace the top cover and tighten the 11 captive screws.

g. Relays K401 through K404, and K406 (fig. 29; RT-246/VRC, fig. 20; RT-524/VRC, fig. 21).

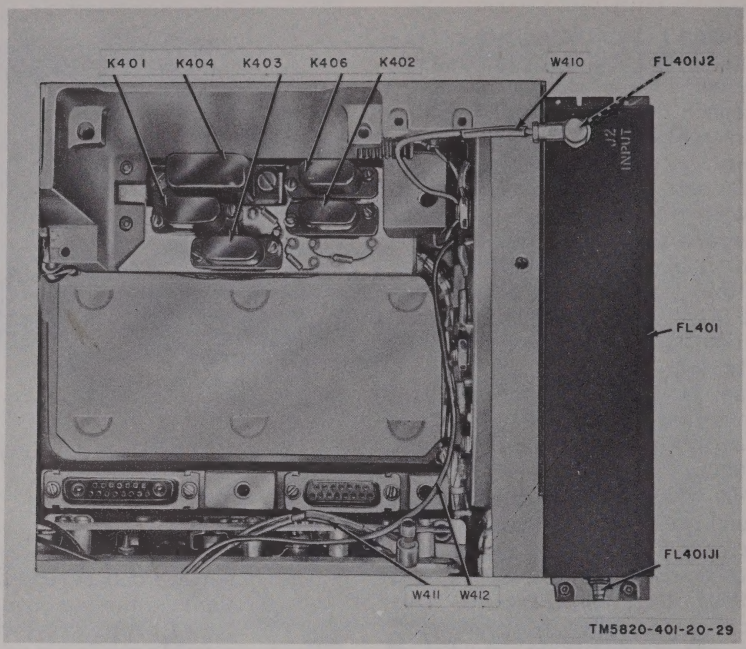

Figure 29. Receiver-Transmitter section, assembly A9000 removed.

(1) Remove relays K401 through K404, and K406 as follows:
- *(a)* Loosen 11 captive screws and remove the top cover of the receiver-transmitter.
- *(b)* Loosen the two captive screws on assembly A8000, swing the assembly out, and unfasten the brace to permit the assembly to swing out farther.
- *(c)* Loosen the four captive screws on filter FL401, pull out the filter, unplug the connections at connectors FL401J1 and FL401J2, and remove the filter.
- *(d)* Use a long, slender-bladed screwdriver to loosen the four captive screws on assembly A9000.
- *(e)* Pull up on the lift rings on assembly A9000 and remove the assembly.
- *(f)* Remove the holddown screws (two for each relay) that secure relays K401 through K404, and K406, and pull out the relays.

(2) Replace relays K401 through K404, and K406 as follows:
- *(a)* Plug relays K401 through K404, and K406 into their sockets and replace and tighten their holddown screws.
- *(b)* Replace assembly A9000 and tighten the four captive screws that secure it.
- *(c)* Plug the end of cable W410 marked "FL401P2" into connector FL401J2 and plug the end of cable W411 marked "FL401P1" into connector FL401J1 on filter FL401.
- *(d)* Position filter FL401 in the case and tighten the four captive screws that secure it.
- *(e)* Fasten the brace on assembly A8000, lower the assembly into the case, and tighten the captive screws that secure it.

(f) Replace the top cover and tighten the 11 captive screws that secure it.

h. Assembly A2100 (fig. 24; RT-246/VRC, fig. 20; RT-524/VRC, fig. 21).

(1) Remove assembly A2100 as follows:

(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.

(b) Loosen the captive screw on assembly A3000 and swing the assembly out until the brace locks.

(c) Loosen three captive screws on assembly A5000.

(d) Pull up on the handle by the connector on assembly A5000 and remove the assembly.

(e) Pull off nine clip leads on assembly A2100 (fig. 24).

Note: The dots beside the assembly terminals correspond to the color-coded leads connected to them.

(f) Remove three screws (two on one end, one on the other) from assembly A2100.

(2) Replace assembly A2100 as follows:

(a) Position assembly A2100 in the case.

(b) Replace and tighten the three screws that secure assembly A2100.

(c) Replace the nine clip leads on assembly A2100; observe the color code.

(d) Replace assembly A5000 and tighten the three captive screws that secure it.

(e) Release the brace on assembly A3000, lower the assembly into the case, and tighten the captive screw that secures it.

(f) Replace the top cover and tighten the 11 captive screws.

i. Relay K405 (RT-246/VRC, fig. 13; RT-524/VRC, fig. 14).

(1) Remove relay K405 as follows:

(a) Loosen 11 captive screws and remove the bottom cover of the receiver-transmitter.

(b) Pull out the relay.

(2) Replace relay K405 as follows:

(a) Plug the relay into its socket.

(b) Replace the bottom cover and tighten the 11 captive screws.

j. Relays K7101 through K7111 (RT-246/VRC only) (fig. 13).

(1) Remove relays K7101 through K7111 as follows:

(a) Loosen 11 captive screws and remove the bottom cover of the RT-246/VRC.

(b) Pull out the relays.

(2) Replace relays K7101 through K7111 as follows:

(a) Plug the relays into their sockets.

(b) Replace the bottom cover and tighten the 11 captive screws.

k. Assembly A4000. Assembly A4000 includes assemblies A4100, A4200, and A4300 and filters FL4001 and FL4002 (RT-246/VRC, fig. 13; RT-524/VRC, fig. 14).

(1) Remove parts from assembly A4000 as follows:

(a) Loosen 11 captive screws and remove the bottom cover of the receiver-transmitter.

(b) Loosen two captive screws on assembly A4000, swing the assembly out, and lock the brace.

(c) To remove assemblies A4100, A4200, and A4300, unsnap four snap slides, remove the shield, loosen the module holddown screws, and pull off the assemblies.

(d) To remove filters FL4001 and FL4002, note their positions by the indicated operation (50 KC CHAN OPER or WIDE BAND OPER), remove the three and five locknuts, respectively, and pull off the filters.

(2) Replace parts on assembly A4000 as follows:

(a) To replace filters FL4001 and FL4002, replace and tighten the locknuts. Be careful to replace filter FL4002, so that its indicated operation is the same as before it was removed.

(b) To replace assemblies A4100,

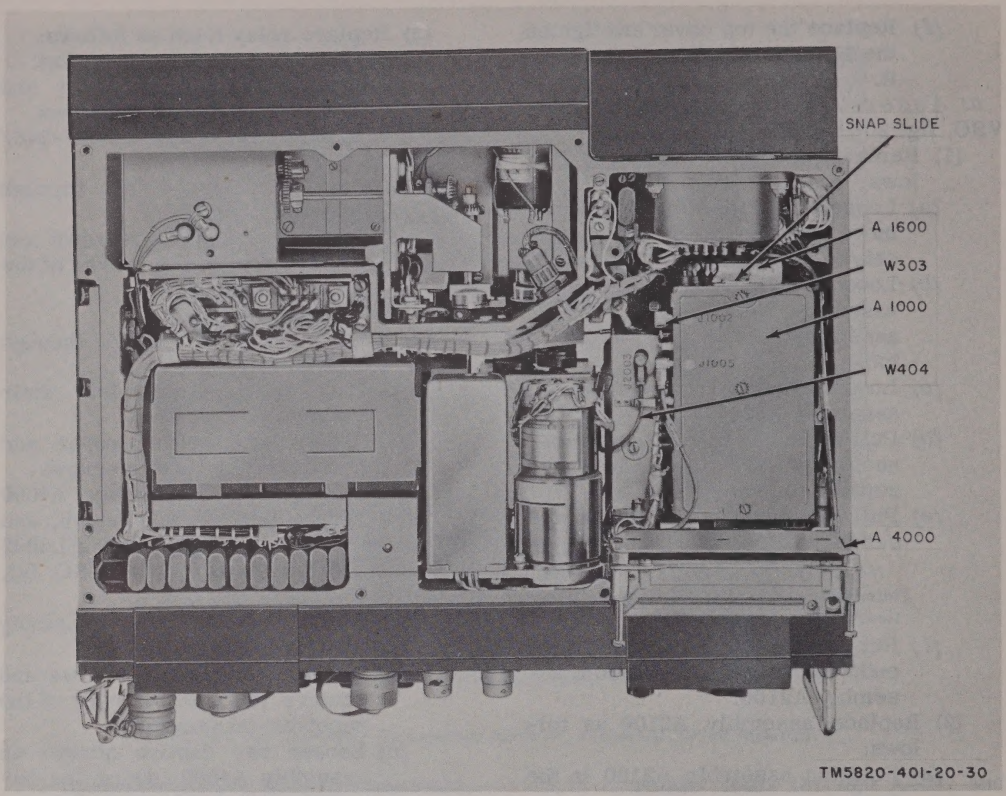

Figure 30. Receiver-Transmitter, Radio RT-246/VRC, bottom cover removed and assembly A4000 raised.

A4200, and A4300, plug the modules onto the main circuit board, tighten the module holddown screws, replace the shield, and fasten the snap slides.

(c) Release the brace on assembly A4000, lower the assembly into the case, and tighten the captive screws that secure it.

(d) Replace the bottom cover and tighten the 11 captive screws.

l. Assembly A1600 (RT-246/VRC, fig. 30; RT-524/VRC, fig. 31).

(1) Remove assembly A1600 as follows:

(a) Loosen 11 captive screws and remove the bottom cover of the receiver-transmitter.

(b) Loosen two captive screws on assembly A4000, swing the assembly out, and lock the brace.

(c) To remove assembly A1600, unplug three connections on assembly A1000, unsnap the snap slide, and remove the assembly.

(2) Replace assembly A1600 as follows:

(a) Position assembly A1600 on assembly A1000, fasten the snap slide, and plug in the three connections on assembly A1000.

(b) Release the brace on assembly A4000, lower the assembly into the case, and tighten the captive screws that secure it.

(c) Replace the bottom cover and tighten the 11 captive screws.

m. Cable W407 (RT-246/VRC, fig. 20; RT-524/VRC, fig. 21).

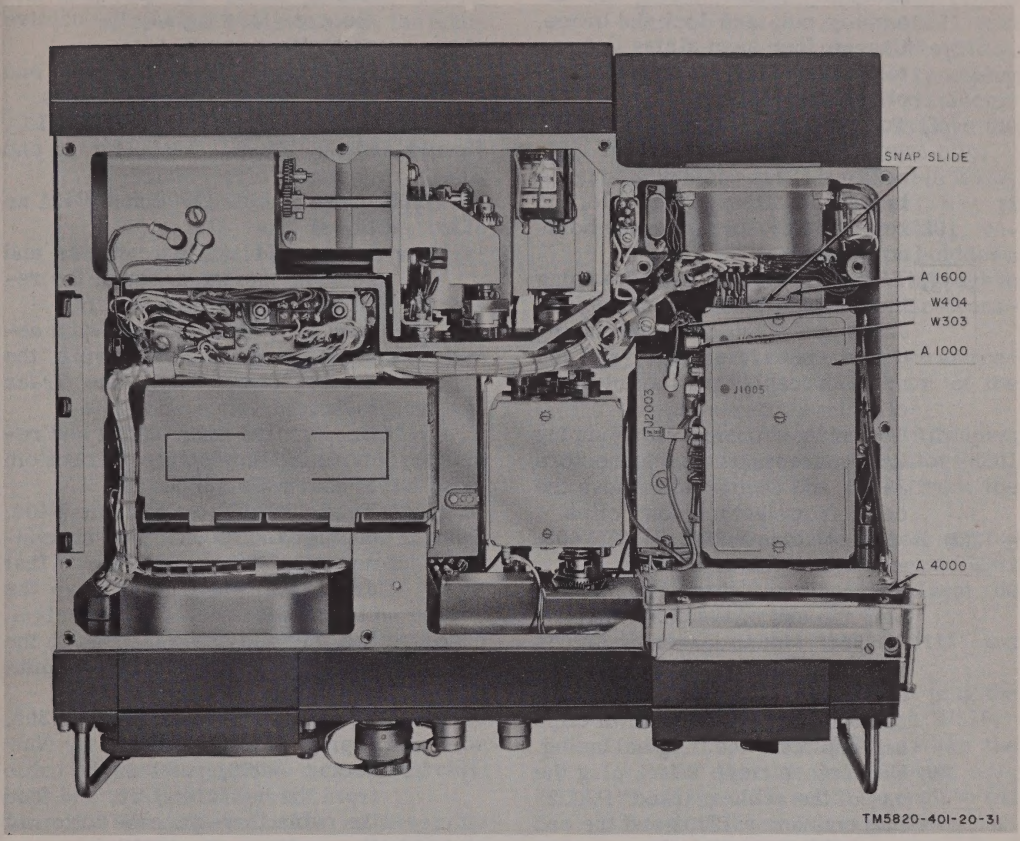

Figure 31. Receiver-Transmitter, Radio RT-524/VRC, bottom cover removed and assembly A4000 raised.

(1) Remove cable W407 as follows:
(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.
(b) Unplug the connections at connectors J6001 and J6101 and remove the cable from the holddown clip.
(2) Replace cable W407 as follows:
(a) Plug the end of the cable marked "P6001" into connector J6001 and the end marked "P6101" into connector J6101. Route the cable through the holddown clip.
(b) Replace the top cover and tighten the 11 captive screws.

n. Cables W202/W402, W403, and W409 (RT-246/VRC, fig. 20; RT-524/VRC, fig. 21).
(1) Remove cables W202/W402, W403, and W409 as follows:
(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.
(b) Loosen the captive screw on assembly A3000 and swing the assembly out until the brace locks.
(c) Unsnap five snap slides and remove the shield from the bottom of assembly A3000.
(d) Loosen the two captive screws on

assembly A8000, swing the assembly out, and lock the brace.

(e) Unsnap four snap slides and remove the shield from the bottom of assembly A8000.

(f) To remove cable W202/W402, unplug the connections at connectors J1004 and J3002, cut the lacing that dresses the cable, and remove the cable from the holddown clips.

(g) To remove cable W403, unplug the connections at connectors J2002 and J3301, cut the lacing that dresses the cable, and remove the cable from the holddown clips.

(h) To remove cable W409, unplug the connections at connectors J1003 and J8301 and remove the cable from the holddown clips.

(2) Replace cables W202, W402, W403, and W409 as follows:

(a) To replace cable W202/W402, plug the end of the cable marked "P1004" into connector J1004 and the end marked "P3002" into into connector J3002. Route the cable through the holddown clips and duplicate the original lacing.

(b) To replace cable W403, plug the end of the cable marked "P2002" into connector J2002 and the end marked "P3301" into connector J3301. Route the cable through the holddown clips and duplicate the original lacing.

(c) To replace cable W409, plug the end of the cable marked "P1003" into connector J1003 and the end marked "P8301" into connector J8301.

(d) Replace the shield on the bottom of assembly A8000 and fasten the snap slides.

(e) Release the brace on assembly A8000, lower the assembly into the case, and tighten the captive screws that secure it.

(f) Replace the shield on the bottom of assembly A3000 and fasten the snap slides.

(g) Release the brace on assembly A3000, lower the assembly into the case, and tighten the captive screw that secures it.

(h) Replace the bottom cover and tighten the 11 captive screws.

o. *Cables W303 and W404* (RT-246/VRC, fig. 20 and 30; RT-524/VRC, fig. 21 and 31).

(1) Remove cables W303 and W404 as follows:

(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.

(b) Loosen the captive screw on assembly A3000 and swing the assembly out until the brace locks.

(c) Unsnap five snap slides and remove the shield from the bottom of assembly A3000.

(d) To remove one end of cable W404, unplug the connection at connector J3701, cut the lacing that dresses the cable, remove the cable from the holddown clips, and feed the cable through to the bottom of the receiver-transmitter.

(e) To remove one end of cable W303, unplug the connection at connector J6003, remove the cable from the holddown clip, and feed the cable through to the bottom of the receiver-transmitter.

(f) Loosen 11 captive screws and remove the bottom cover of the receiver-transmitter.

(g) Loosen two captive screws on assembly A4000, swing the assembly out, and lock the brace.

(h) To remove the other end of cable W404, unplug the connection at connector J2003, remove the cable from the holddown clip, and pull out the cable.

(i) To remove the other end of cable W303, unplug the connection at connector J1002 and pull out the cable.

(2) Replace cables W303 and W404 as follows:

(a) To replace one end of cable W404, plug the end of the cable marked

"P2003" into connector J2003, route the cable through the holddown clips, and feed the cable through the top of the receiver-transmitter.

(b) To replace one end of cable W303, plug the end of the cable marked "P1002" into connector J1002, route the cable through the holddown clip, and feed the cable through to the top of the receiver-transmitter.

(c) Release the brace on assembly A4000, lower the assembly into the case, and tighten the captive screws that secure it.

(d) Replace the bottom cover and tighten the 11 captive screws.

(e) To replace the other end of cable W404, plug the end of the cable marked "P3701" into connector J3701. Route the cable through the holddown clips and duplicate the original lacing.

(f) Replace the shield on the bottom of assembly A3000 and fasten the snap slides.

(g) To replace the other end of cable W303, plug the end of the cable marked P6003, into connector J6003 and route the cable through the holddown clip.

(h) Release the brace on assembly A3000, lower the assembly into the case, and tighten the captive screw that secures it.

(i) Replace the top cover and tighten the 11 captive screws.

p. Cables W410, W411, and W412 (fig. 29) (RT-246/VRC, fig. 18 and 20; RT-524/VRC, fig. 14 and 21).

(1) Remove cables W410, W411, and W412 as follows:

(a) Loosen 11 captive screws and remove the top cover of the receiver-transmitter.

(b) Loosen the two captive screws on assembly A8000, swing the assembly out, and unfasten the brace to permit the assembly to swing out farther.

(c) Loosen the four captive screws on filter FL401, pull out the filter, unplug the connections at connectors FL401J1 and FL401J2, and remove the filter.

(d) To remove cable W411, unplug the connection at connector K301J3 on K301 and remove the cable from the holddown clip.

(e) To remove one end of cable W412, unplug the connection at connector K301J2 on K301, remove the cable from the holddown clip, and feed the cable through to the bottom of the receiver-transmitter.

(f) Loosen 11 captive screws and remove the bottom cover of the receiver-transmitter.

(g) To remove cable W410, unplug the connection at connector J6201 and remove the cable from the holddown clip.

(h) To remove cable W412, unplug the connection at connector J6202 and remove the cable from the holddown clip.

(2) Replace cables W410, W411, and W412 as follows:

(a) To replace cable W412, plug the end of the cable marked "P6202" into connector J6202, route the cable through the holddown clip, and feed the cable through to the top of the receiver-transmitter. Plug the end of the cable marked "K301P2" into connector K301J2 on K301 and route the cable through the holddown clip.

(b) To replace one end of cable W410, plug the end of the cable marked P6201 into connector J6201, route the cable through the holddown clip, and feed the cable through to the top of the receiver-transmitter.

(c) To replace one end of cable W411, plug the end of the cable marked "K301P3" into connector K301J3 on K301 and route the cable through the holddown clip.

(d) On filter FL401, connect the end of cable W410 marked "FL401P2" into connector FL401J2 and the end of cable

W411 marked "FL401P1" into connector FL401J1.

(e) Position filter FL401 in the case and tighten the four captive screws that secure it.

(f) Fasten the brace on assembly A8000, lower the assembly into the case, and tighten the captive screws that secure it.

(g) Replace the top cover and tighten the 11 captive screws.

(h) Replace the bottom cover and tighten the 11 captive screws.

q. *Knobs.*

(1) Remove the knobs from the receiver-transmitter as follows:

(a) Remove the screw that secures the knob to the control shaft.

(b) Pull off the knob.

(2) Replace knobs on the receiver-transmitter as follows:

(a) Push the knob onto the control shaft.

(b) Replace and tighten the screw.

18. Parts Removal and Replacement in Mountings MT-1029/VRC and MT-1898/VRC (fig. 2 and 3)

Repairs made to MT-1029/VRC and MT-1898/VRC are limited to replacing the fuses.

a. Remove the fuses as follows:

(1) Loosen six captive screws and remove the cover from the junction box.

(2) Loosen the two screws that secure the fuse to the cover and remove the fuse.

b. Replace fuses as follows:

(1) Slip the fuse under the holddown screws on the cover. Tighten the holddown screws firmly.

(2) Replace the junction box cover and tighten the six captive screws.

Caution: **Be careful not to bend the extended connections on the fuse terminals that plug into the terminals in the junction box.**

19. Parts Removal and Replacement in Antenna Matching Unit MX-2799/VRC (fig. 32 and 33)

Repairs made to the MX-2799/VRC at the organizational level are limited to replacing relay K551 and the 10 matching network circuit boards.

a. Remove parts from the MX-2799/VRC as follows:

(1) Disconnect the antenna coaxial connector from the coaxial connector at the rear of the MX-2799/VRC.

(2) Loosen four captive screws and pull the chassis of the MX-2799/VRC out of its case.

(3) To remove relay K551, remove the two holddown screws that secure the relay and pull out the relay.

(4) To remove assemblies A560, A570, A580, A590, A600, A610, A620, A630, A640, and A650, unlatch and pull up the securing rods and pull out the assemblies.

Note: Start the securing rods out from the bottom of the chassis. Use a driftpin or a small punch.

b. Replace parts in the MX-2799/VRC as follows:

(1) To replace assemblies A560, A570, A580, A590, A600, A610, A620, A630, A640, and A650, push the assemblies into their slots and push down and latch the securing rods.

(2) To replace relay K551, plug the relay into its socket and replace and tighten the two holddown screws.

(3) Push the chassis of the MX-2799/VRC back into its case and tighten the four captive screws that secure it.

(4) Connect the antenna coaxial connector to the coaxial connector at the rear of the MX-2799/VRC.

20. Parts Removal and Replacement in System Control Boxes

Repairs made to system control boxes at the organizational level are limited to

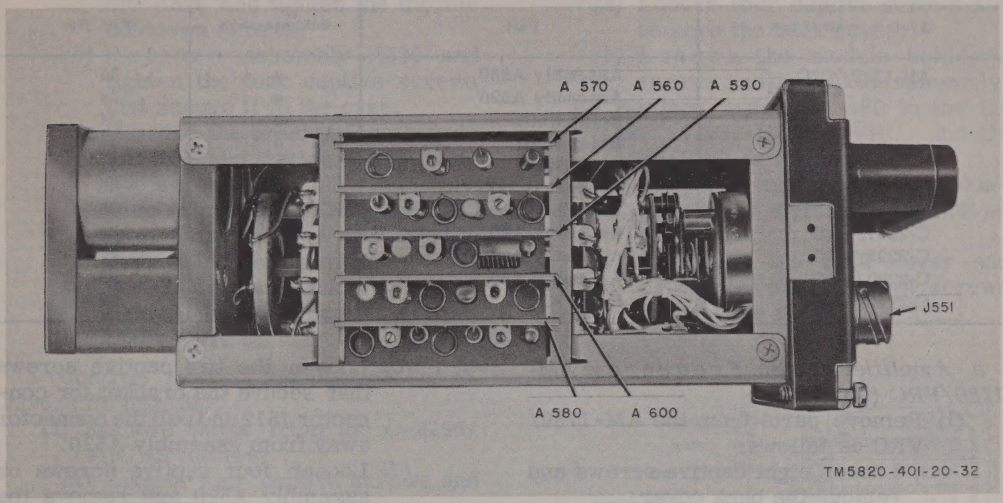

Figure 32. Antenna Matching Unit MX-2799/VRC, cover removed, right side.

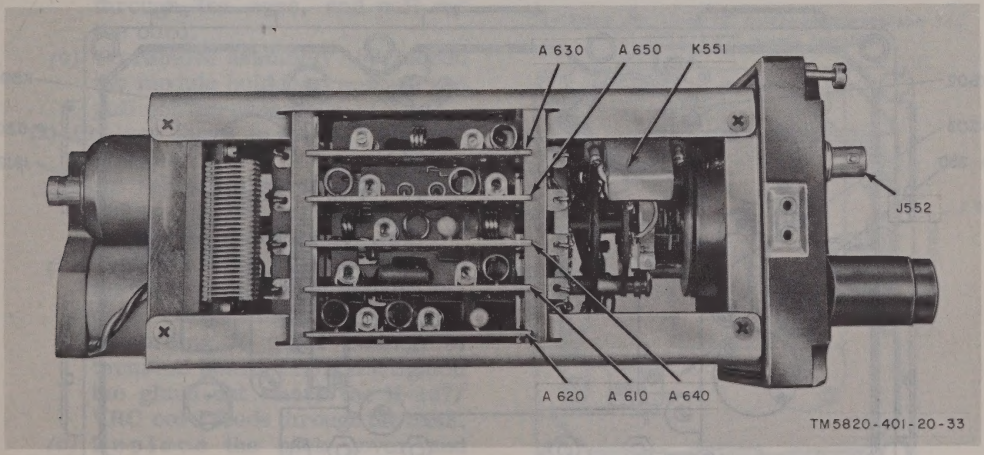

Figure 33. Antenna Matching Unit MX-2799/VRC, cover removed, left side.

replacing the parts listed below. To remove and replace parts, refer to the applicable subparagraphs in this paragraph and illustrations listed in the chart below.

System control box	Part	Subparagraph	Fig. No.
AM-1780/VRC	Assembly A250	*a*	34
	Assembly A520	*a*	34
	Relay K501	*a*	34
	Relay K502	*a*	34
	Relay K503	*a*	34
C-2296/VRC	Handset H-297/VRC	*b*	35
	Assembly A80	*b*	35
C-2297/VRC	Assembly A80	*c*	36
C-2298/VRC	Assembly A80	*c*	37
C-2299/VRC	Assembly A80	*c*	38
C-2742/VRC	Relay K71	*d*	39

a. Amplifier, Audio Frequency AM-1780/VRC (fig. 34).

(1) Remove parts from the AM-1780/VRC as follows:

(a) Loosen eight captive screws and remove the back cover.

(b) Loosen the holddown screws (two for each relay) that secure relays K501, K502, and K503, and pull out the relays.

(c) Loosen the two captive screws that secure the bracket for connector J512 and pull the connector away from assembly A520.

(d) Loosen four captive screws on assembly A520 and remove the assembly.

(e) Loosen the module holddown screws and pull off assembly A250.

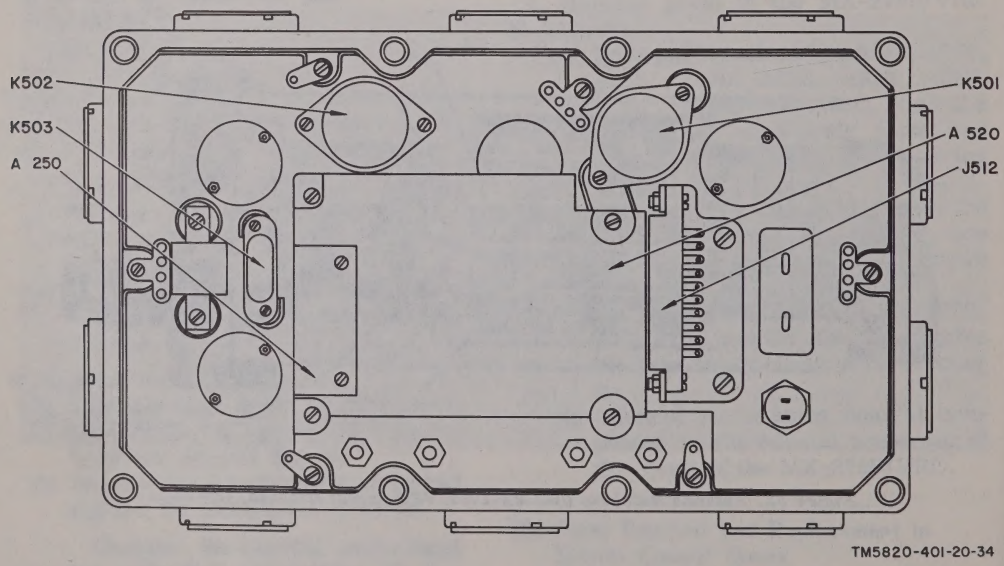

Figure 34. Amplifier, Audio Frequency AM-1780/VRC, parts location.

(2) Replace parts in the AM-1780/VRC as follows:
(a) Plug assembly A250 onto assembly A520 and tighten the module holddown screws.
(b) Replace assembly A520 and tighten the four captive screws that secure it to the case.
(c) Position the bracket for connector J512 and tighten the two captive screws.
(d) Plug relays K501, K502, and K503 into their sockets and tighten their holddown screws.
(e) Replace the back cover and tighten the eight captive screws that secure it.

b. Control, Intercommunication Set C-2296/VRC (fig. 35).
(1) Remove parts from the C-2296/VRC as follows:
(a) Loosen four captive screws and remove the back cover.
(b) To remove the H-207/VRC, loosen the screws that secure the five spade lugs to terminal board TB61, loosen the gland nut where the H-207/VRC cord feeds through the case, and pull out the cord.
(c) To remove assembly A80, loosen the module holddown screws and pull out the assembly.
(2) Replace parts in the C-2296/VRC as follows:
(a) To replace assembly A80, plug the module into its connector and tighten the holddown screws.
(b) To replace the H-207/VRC, feed the H-207/VRC cord through the case, connect the five spade lugs (according to color coding) to terminal board TB61, and tighten the gland nut where the H-207/VRC cord feeds through the case.
(c) Replace the back cover and tighten the four captive screws that secure it.

c. Controls, Intercommunication Set C-2297/VRC and C-2298/VRC, and Control, Radio Set C-2299/VRC (fig. 36, 37, and 38).
(1) Remove assembly A80 from the C-2297/VRC, C-2298/VRC, and C-2299/VRC as follows:
(a) Loosen four captive screws and remove the back cover.
(b) Loosen the module holddown screws and pull out the assembly.
(2) Replace assembly A80 in the C-2297/VRC, C-2298/VRC, and C-2299/VRC as follows:
(a) Plug the module into its connector and tighten the holddown screws.
(b) Replace the back cover and tighten the four captive screws that secure it.

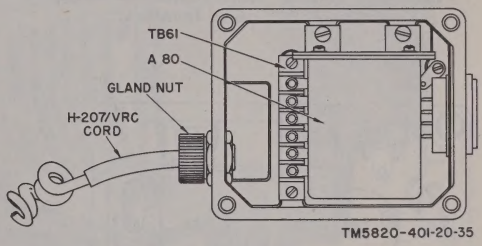

Figure 35. Control, Intercommunication Set C-2296/VRC, parts location.

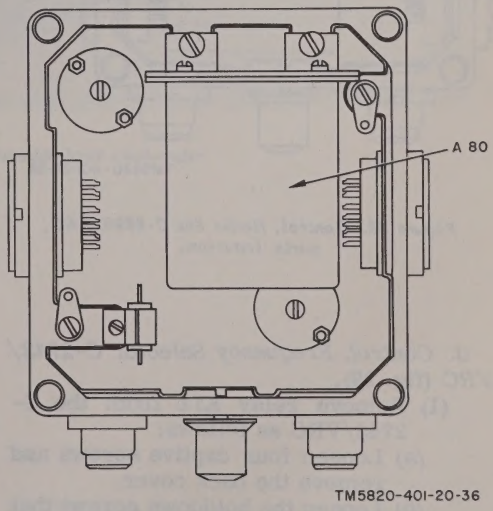

Figure 36. Control, Intercommunication Set C-2297/VRC, parts location.

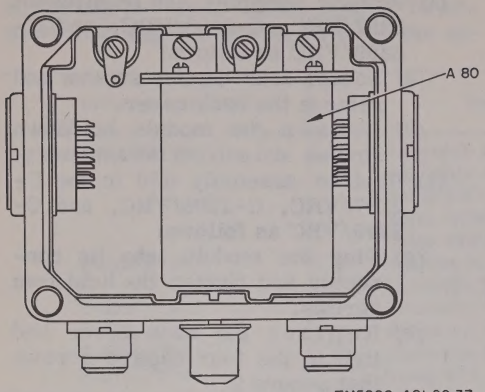

Figure 37. Control, Intercommunication Set C-2298/VRC, parts location.

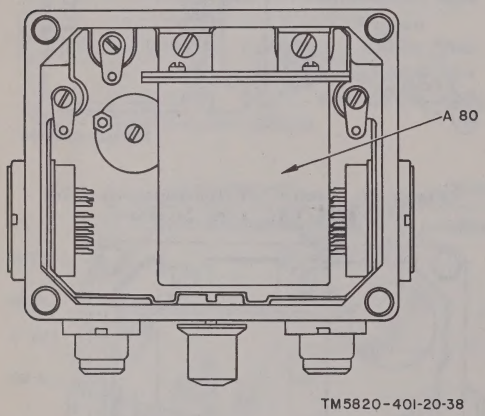

Figure 38. Control, Radio Set C-2299/VRC, parts location.

d. Control, Frequency Selector C-2742/VRC (fig. 39).

(1) Remove relay K71 from the C-2742/VRC as follows:

(a) Loosen four captive screws and remove the back cover.

(b) Loosen the holddown screws that secure relay K71 and pull out the relay.

(2) Replace relay K71 in the C-2742/VRC as follows:

(a) Plug the relay into its socket and tighten the holddown screws.

(b) Replace the back cover and tighten the four captive screws that secure it.

21. Procedure for Cleaning Receiver-Transmitter Heat Exchanger

Besides routine cleaning of the equipment, special attention should be given to the heat exchanger (fig. 40) on the receiver-transmitter power amplifier. Since no filters are provided on the air intake and exhaust ports, the heat exchanger will accumulate dirt. To clean the heat exchanger:

a. Remove the receiver-transmitter from its MT-1029/VRC.

b. Loosen 11 captive screws and remove the top cover of the receiver-transmitter.

c. Loosen 14 captive screws and remove the covers from the rear and right side of the receiver-transmitter.

d. Use a small, dry, stiff-bristled brush to clean between the fins on the heat exchanger.

e. Clean the vanes on the blower motor squirrel cage.

f. Replace the rear and right side covers and secure them with the captive screws.

g. Replace the top cover and tighten the 11 captive screws.

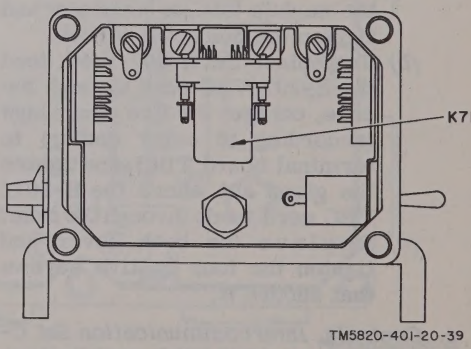

Figure 39. Control, Frequency Selector C-2742/VRC, parts location.

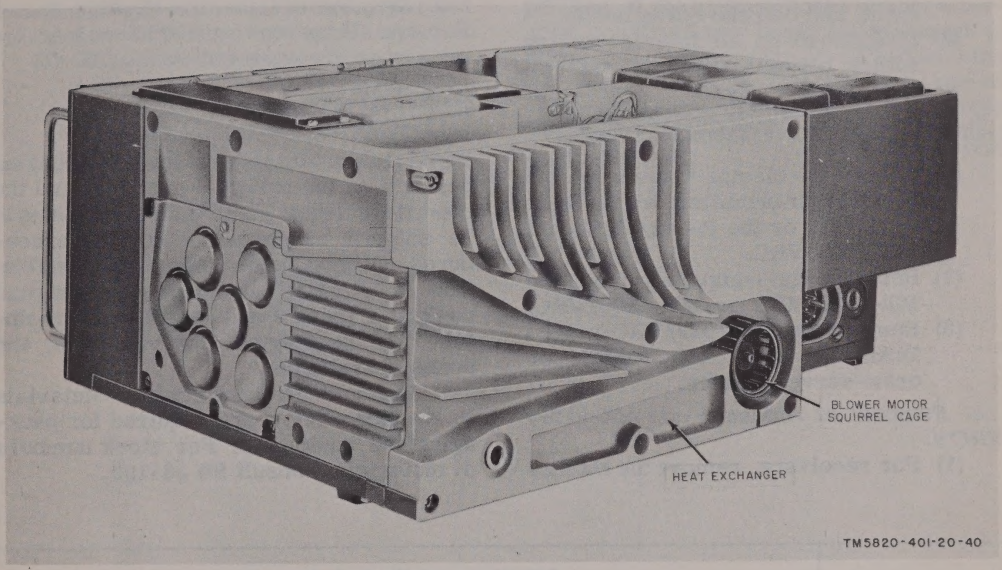

Figure 40. Receiver-transmitter heat exchanger.

CHAPTER 3

SHIPMENT AND LIMITED STORAGE

22. Disassembly of Equipment

The following instructions are recommended as a guide for preparing the equipment for shipment or limited storage.

a. Disconnecting Cables.

(1) Disconnect all audio accessories from their connectors on the equipment, and coil the cords neatly.

(2) Disconnect all interconnecting cables between the units, and coil the cables neatly.

b. Removal of Receiver-Transmitters and R-442/VRC's.

(1) Loosen the clamps that secure the receiver-transmitter to its MT-1029/VRC or the R-442/VRC to its MT-1898/VRC.

(2) Remove the equipment from the MT-1029/VRC or MT-1898/VRC.

(3) Remove the MT-1029/VRC or MT-1898/VRC from the vehicle or crew-served weapon.

c. Removal of Antennas and MX-2799/VRC's.

(1) For receivers, remove the antenna from the vehicle or crew-served weapon.

(2) For receiver-transmitters, remove the antenna sections from the MX-2799/VRC and remove the MX-2799/VRC from the vehicle or crew-served weapon.

d. Removal of System Control Boxes. Remove all system control boxes from the vehicle or crew-served weapon.

23. Repackaging for Shipment or Limited Storage

The exact procedure for repackaging depends on the material available and the conditions under which the equipment is to be shipped or stored. Adapt the procedures outlined below whenever possible. The information concerning the original packaging (para 2 and 3) will also be helpful. Use the original cartons, pads, and boxes if available.

a. Material Requirements. Materials in the chart below are required for packaging the equipment. For stock numbers of materials, consult SB 38-100.

Material	Approximate quantity per component						
	R-442/VRC	Receiver-transmitter	MT-1029/VRC	MT-1898/VRC	System control box	Cable	AT-912/VRC
Waterproof paper (square feet)	4-1/2	12-1/2	8-1/2	3-1/2	1-3/4	2-1/2	14
Waterproof tape (feet)	5-1/2	10	8	5	3-1/2	3	19-1/2
Cotton twine (feet)	-	-	-	-	-	2	-
Corrugated cardboard (square feet)	4-1/2	12-1/2	8-1/2	3-1/2	1-3/4	2-1/2	14
Pressure-sensitive tape (feet)	5-1/2	10	8	5	3-1/2	3	19-1/2
Filler material (pounds)	1	2	2	1	1	-	1

Note: Tighten all front panel retaining screws before beginning repackaging procedures.

b. Packaging. Package the equipment as outlined below.

(1) *Major components.* Cushion the equipment on all surfaces with pads of filler material. Secure the pads to the equipment with pressure-sensitive tape. Place a cushioned unit within a warp of corrugated cardboard. Secure the wrap with pressure-sensitive tape. Wrap the package with waterproof paper and secure it with waterproof tape.

(2) *Minor components.* Wind each cable assembly into a coil of convenient dimensions and tie it with cotton twine. Package the antenna to insure mechanical and physical protection. Use filler material to cushion each item as required. Consolidate the minor components within a warp of corrugated cardboard and secure them with pressure-sensitive tape. Wrap the package with waterproof paper and secure it with waterproof tape.

(3) *Technical manuals.* Wrap the technical manuals in waterproof paper and seal with waterproof tape.

c. Packing. Pack the components of the radio set in wooden boxes as in the original packing. If the original boxes are not available, construct new boxes large enough to allow 1-inch clearance on all sides. Line the inside of each box with waterproof paper and corrugated cardboard. Place the wrapped equipment in the boxes and nail on the box lids.

APPENDIX I
REFERENCES

The following is a list of applicable references that are available to the organizational repairman of the radio set.

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
SB 11-525	Operation Modex, Modular Study for Radio Sets AN/VRC-12 and -43 through -49.
SB 38-100	Preservation, Packaging, and Packing Materials, Supplies, and Equipment Used by the Army.
TM 11-5820-401-10	Operator's Manual, Radio Sets AN/VRC-12 and AN/VRC-43, -44, -45, -46, -47, -48, and -49.
TM 11-5820-401-20P	Organizational Maintenance Repair Parts and Special Tools List, Radio Sets AN/VRC-12 and AN/VRC-43, -44, -45, -46, -47, -48, and -49.
TM 11-5985-230-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Mast Base AB-15/GR.
TM 11-6625-203-12	Operation and Organizational Maintenance; Multimeter AN/URM-105, including Multimeter ME-77/U.
TM 11-6625-274-12	Operator's and Organizational Maintenance Manual: Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U, and TV-7D/U.

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

a. This appendix assigns maintenance functions to be performed on components, assemblies, and subassemblies by the lowest appropriate maintenance echelon.

b. Columns in the maintenance allocation chart are as follows:

(1) *Part or component.* This column shows only the nomenclature or standard item name. Additional descriptive data are included only where clarification is necessary to identify the component. Components, assemblies, and subassemblies are listed in top-down order. That is, the assemblies which are part of a component are listed immediately below that component, and the subassemblies which are part of an assembly are listed immediately below that assembly. Each generation breakdown (components, assemblies, or subassemblies) is listed in disassembly order or alphabetical order.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelons.

(a) Service. To clean, to preserve, and to replenish lubricants.

(b) Adjust. To regulate periodically to prevent malfunction.

(c) Inspect. To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

(d) Test. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

(e) Replace. To substitute serviceable components, assemblies, or subassemblies, for unserviceable components, assemblies, or subassemblies.

(f) Repair. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

(g) Align. To adjust two or more components of an electrical system so that their functions are properly synchronized.

(h) Calibrate. To determine, check, or rectify the graduation of an instrument, weapon, or weapons system, or components of a weapons system.

(i) Overhaul. To restore an item to *completely serviceable* condition as prescribed by serviceability standards developed and published by heads of technical services. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

(j) Rebuild. To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and/or

specifications and subsequent reassembly of the item.

(3) *1st, 2d, 3d, 4th, 5th echelon.* The symbol X indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by X are authorized to perform the indicated operations.

(4) *Tools required.* This column indicates codes assigned to each individual tool equipment, test equipment and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.

(5) *Remarks.* Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding columns.

c. Columns in the allocation of tools for maintenance functions are as follows:

(1) *Tools required for maintenance functions.* This column lists tool, test, and maintenance equipment required to perform the maintenance functions.

(2) *1st, 2d, 3d, 4th, 5th echelon.* The dagger (†) symbol indicates the echelons normally allocated the facility.

(3) *Tool code.* This column lists the tool code assigned.

(4) *Remarks.* Entries in this column are used to clarify data in the other columns.

2. Maintenance by Using Organizations

When this equipment is used by signal service organizations organic to the theater headquarters or communication zones to provide theater communications, those maintenance functions allocated up to and including fourth echelon are authorized to the organization operating this equipment.

3. Comments or Suggestions

Any comments concerning omissions and discrepancies in this appendix will be prepared on DA Form 2028 and forwarded direct to Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-ML, Fort Monmouth, N. J.

4. Listing of Charts

The maintenance allocation charts and the allocation of tools for maintenance functions for the radio sets and for individual components appear in sections of this appendix in the order listed in the chart below.

Radio set or component	Sections
AM–1780/VRC	II, III
AN/VRC–12	IV, V
AN/VRC–43	VI, VII
AN/VRC–44	VIII, IX
AN/VRC–45	X, XI
AN/VRC–46	XII, XIII
AN/VRC–47	XIV, XV
AN/VRC–48	XVI, XVII
AN/VRC–49	XVIII, XIX
AT–912/VRC	XX, XXI
C–2742/VRC	XXII, XXIII
C–2296/VRC	XXIV, XXV
C–2297/VRC	XXVI, XXII
C–2298/VRC	XXIII, XXIX
C–2299/VRC	XXX, XXXI
MT–1029/VRC	XXXII, XXXIII
MT–1898/VRC	XXXIV, XXXV
R–442/VRC	XXXVI, XXXVII
RT–246/VRC	XXXVIII, XXXIX
RT–524/VRC	XXXX, XXXXI

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
AMPLIFIER, AUDIO FREQUENCY AM-1780/VRC	service		X				1	
				X			2	
	inspect	X						No facilities required
	test		X				4	
				X			3,5	
					X		3,5,6,7	
	repair	X						Limited to replacement of Running Spare Lamps
			X				1	Pluck out parts, Modules and Relays
				X			2	
	rebuild					X	2	
AMPLIFIER, AUDIO FREQUENCY: (Module)	replace		X				1	A250
	overhaul					X	2	
AMPLIFIER, SUBASSEMBLY: (Module)	replace		X				1	A520
	repair				X		2	
	overhaul					X	2	

Section III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, AM-1780/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
AM-1780/VRC (continued)							
TOOL EQUIPMENT TK-115/U		†				1	
TOOL EQUIPMENT TK-87/U			†	†	†	2	
MULTIMETER, METER ME-26/U			†	†	†	3	
MULTIMETER AN/URM-105		†				4	
AUDIO OSCILLATOR TS-382/U			†	†	†	5	
VOLTMETER, METER ME-30/U				†	†	6	
SPECTRUM ANALYZER TS-723/U				†	†	7	

Section IV. MAINTENANCE ALLOCATION CHART, AN/VRC-12

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RADIO SET AN/VRC-12: (BASIC UNIT)								
	service		X				16	
	adjust			X			15	
	inspect	X						No facilities required
	test		X				5,6,14	Continuity
				X			7,8,9,10,11,14,19	Continuity, voltage, resistance, sensitivety, Power output (transmitter)
					X		1,2,3,4,7,8,9,10, 11,12,14,17,19	Same as 3rd plus selectivety, audio power and fidelity, modulation, distortion limiting.
						X	1,2,3,4,7,8,9, 10,11,12,13,17, 18,19,21	Plus test fixture sets for servo amplifier same test as for 4th echelon.
	repair	X						Limited to replacement of Running Spare Items
			X				16	Major component replacement and pluck out parts
				X			15	
					X		15,20	
	align			X			7,8,9,10,11,15	
	calibrate				X		1,2,3,4,7,8,10, 11,12,17	
	rebuild					X	15,20	
ANTENNA AT-912/VRC	replace		X				16	Separate MAC
ANTENNA MATCHING UNIT MX-2799/VRC	replace		X				16	p/o ANTENNA AT-912/VRC MAC
BAG CW-206/GR	replace	X						(Bag for Spare Mast sections MS-116A, MS-117A, MS-118A)
	repair					X		
CABLE ASSEMBLIES	replace		X				16	Easily accessible pluck out assemblies only
				X			15	Others
MAST BASE AB-15/GR	replace		X				16	Separate MAC
MAST SECTIONS	replace	X						MS-116A, MS-117A, MS-118A
MOUNTING MT-1029/VRC	replace		X				16	Separate MAC
MOUNTING MT-1898/VRC	replace		X				16	Separate MAC
RECEIVER, RADIO R-442/VRC	replace		X				16	Separate MAC
RECEIVER-TRANSMITTER, RADIO RT-246/VRC	replace		X				16	Separate MAC

Section V. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, AN/VRC-12

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
AN/VRC-12 (continued)							
ANALYZER SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/U				†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
METER, MODULATION ME-57/U				†	†	4	
MODULE TEST SET		†				5	
MULTIMETER AN/URM-105		†				6	
MULTIMETER, METER ME-26/U			†	†	†	7	
OSCILLOSCOPE AN/USM-50			†	†	†	8	
R.F. SIGNAL GENERATOR SET AN/URM-25			†	†	†	9	
R.F. WATTMETER AN/URM-120			†	†	†	10	
SIGNAL GENERATOR SG-297( )/U			†	†	†	11	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	12	
TEST SET, ELECTRON TUBE TV-2/U					†	13	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		14	
TOOL KIT TK-87/U			†	†	†	15	
TOOL KIT TK-115/G		†				16	
VOLTMETER, METER ME-30/U				†	†	17	
HETERODYNE VOLTMETER, BRUEL AND KJEER MODEL 2005					†	18	(CONUS 5th echelon depot only)
MULTIMETER TS-352/U			†	†	†	19	
TOOL KIT TK-88/U				†	†	20	
MODULE ELEMENT TEST SET					†	21	(For use at LEXINGTON SIGNAL DEPOT)

Section VI. MAINTENANCE ALLOCATION CHART, AN/VRC-43

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RADIO SET AN/VRC-43: (BASIC UNIT)								
	service		X				16	
	adjust			X			15	
	inspect	X						No facilities required
	test		X				5,6,14	
				X			7,8,9,10,11,14,19	Same tests
					X		1,2,3,4,7,8,9,10,	as those
							11,12,14,17,19	for RT-246/VRC
						X	1,2,3,4,7,8,9,	
							10,11,12,13,17,	
							18,19,21	
	repair	X						Limited to replacement of Running Spare Items
			X				16	Major component replacement and pluck out parts
				X			15	
					X		15,20	
	align			X			7,8,9,10,11,15	
	calibrate				X		1,2,3,4,7,8,9,10,	
							11,12,17	
	rebuild					X	15,20	
ANTENNA AT-912/VRC	replace		X				16	Separate MAC
ANTENNA MATCHING UNIT MX-2799/VRC	replace		X				16	p/o ANTENNA AT-912/VRC MAC
CABLE ASSEMBLIES	replace		X				16	Easily accessible pluck out assemblies only
				X			15	Others
MOUNTING MT-1029/VRC	replace		X				16	Separate MAC
RECEIVER-TRANSMITTER, RADIO RT-246/VRC	replace		X				16	Separate MAC

Section VII. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, AN/VRC-43

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
AN/VRC-43 (continued)							
ANALYZER, SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/U			†	†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
METER, MODULATION ME-57/U				†	†	4	
MODULE TEST SET		†				5	
MULTIMETER AN/URM-105		†				6	
MULTIMETER, METER ME-26/U			†	†	†	7	
OSCILLOSCOPE AN/USM-50			†	†	†	8	
RF SIGNAL GENERATOR SET AN/URM-25			†	†	†	9	
RF WATTMETER AN/URM-120			†	†	†	10	
SIGNAL GENERATOR SG-297( )/U			†	†	†	11	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	12	
TEST SET, ELECTRON TUBE TV-2/U					†	13	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		14	
TOOL KIT TK-87/U			†	†	†	15	
TOOL KIT TK-115/G		†				16	
VOLTMETER, METER ME-30/U				†	†	17	
HETERODYNE VOLTMETER, BRUEL AND KJOER MODEL 2005					†	18	(CONUS 5th echelon depot only)
MULTIMETER TS-352/U			†	†	†	19	
TOOL KIT TK-88/U				†	†	20	
MODULE ELEMENT TEST SET					†	21	(For use at LEXINGTON SIGNAL DEPOT)

Section VIII. MAINTENANCE ALLOCATION CHART, AN/VRC-44

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
RADIO SET AN/VRC-44: (BASIC UNIT)								
	service		X				16	
	adjust			X			15	
	inspect	X						No facilities required
	test		X				5,6,14	
				X			7,8,9,10,11,14,19	Same test as those for
					X		1,2,3,4,7,8,9,10,	R-442/VRC and
							11,12,14,17,19	RT-246/VRC
						X	1,2,3,4,7,8,9,	
							10,11,12,13,17,	
							18,19,21	
	repair	X						Limited to replacement of Running Spare Items
			X				16	Major component replacement and pluck out parts
				X			15	
							15,20	
	align			X			7,8,9,10,11,15	
	calibrate				X		1,2,3,4,7,8,10,	
							11,12,17	
	rebuild					X	15,20	
ANTENNA AT-912/VRC	replace		X				16	Separate MAC
ANTENNA MATCHING UNIT MX-2799/VRC	replace		X				16	p/o ANTENNA AT-912/VRC MAC
CABLE ASSEMBLIES	replace		X				16	Easily accessible pluck out assemblies only
				X			15	Others
BAG CW-206/GR	replace	X						(Bag for Spare Mast sections MS-116A, MS-117A, MS-118A)
	repair					X		
MAST BASE AB-15/GR	replace		X				16	Separate MAC
MAST SECTIONS	replace	X						MS-116A, MS-117A, MS-118A
MOUNTING MT-1029/VRC	replace		X				16	Separate MAC
MOUNTING MT-1898/VRC	replace		X				16	Separate MAC
RECEIVER, RADIO R-442/VRC	replace		X				16	Separate MAC
RECEIVER-TRANSMITTER, RADIO RT-246/VRC	replace		X				16	Separate MAC

Section IX. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, AN/VRC-44

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
AN/VRC-44 (continued)							
ANALYZER, SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/U				†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
METER, MODULATION ME-57/U				†	†	4	
MODULE TEST SET		†				5	
MULTIMETER AN/URM-105		†				6	
MULTIMETER, METER ME-26/U			†	†	†	7	
OSCILLOSCOPE AN/USM-50			†	†	†	8	
RF SIGNAL GENERATOR SET AN/URM-25			†	†	†	9	
RF WATTMETER AN/URM-120			†	†	†	10	
SIGNAL GENERATOR SG-297( )/U			†	†	†	11	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	12	
TEST SET, ELECTRON TUBE TV-2/U					†	13	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		14	
TOOL KIT TK-87/U			†	†	†	15	
TOOL KIT TK-115/G		†				16	
VOLTMETER, METER ME-30/U				†	†	17	
HETERODYNE VOLTMETER, BRUEL AND KJOER MODEL 2005					†	18	(CONUS 5th echelon depot only)
MULTIMETER TS-352/U			†	†	†	19	
TOOL KIT TK-88/U				†	†	20	
MODULE ELEMENT TEST SET					†	21	(For use at LEXINGTON SIGNAL DEPOT)

Section X. MAINTENANCE ALLOCATION CHART, AN/VRC-45

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RADIO SET AN/VRC-45: (BASIC UNIT)	service		X				16	
	adjust			X			15	
	inspect	X						No facilities required
	test		X				5,6,14	
				X			7,8,9,10,11,14,19	Same test as those
					X		1,2,3,4,7,8,9,10, 11,12,14,17,19	for RT-246/VRC
						X	1,2,3,4,7,8,9, 10,11,12,13,17, 18,19,21	
	repair	X						Limited to replacement of Running Spare Items
			X				16	Major component replacement and pluck out parts
				X			15	
					X		15,20	
	align			X			7,8,9,10,11,15	
	calibrate				X		1,2,3,4,7,8,10, 11,12,17	
	rebuild					X	15,20	
ANTENNA AT-912/VRC	replace		X				16	Separate MAC
ANTENNA MATCHING UNIT MX-2799/VRC	replace		X				16	p/o ANTENNA AT-912/VRC MAC
CABLE ASSEMBLIES	replace		X				16	Easily accessible pluck out assemblies only
				X			15	Others
MOUNTING MT-1029/VR	replace		X				16	Separate MAC
RECEIVER-TRANSMITTER, RADIO RT-246/VRC	replace		X				16	Separate MAC
CONTROL, RADIO SET C-2299/VRC	replace		X				16	Separate MAC

Section XI. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, AN/VRC-45

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH.	(3) 2ND ECH.	(4) 3RD ECH.	(5) 4TH ECH.	(6) 5TH ECH.	(7) TOOL CODE	(8) REMARKS
AN/VRC-45 (continued)							
ANALYZER, SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/U				†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
METER, MODULATION ME-57/U				†	†	4	
MODULE TEST SET		†				5	
MULTIMETER AN/UPM-105		†				6	
MULTIMETER, METER ME-26/U			†	†	†	7	
OSCILLOSCOPE AN/USM-50			†	†	†	8	
RF SIGNAL GENERATOR SET AN/URM-25			†	†	†	9	
RF WATTMETER AN/URM-120			†	†	†	10	
SIGNAL GENERATOR SG-297( )/U			†	†	†	11	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	12	
TEST SET, ELECTRON TUBE TV-2/U					†	13	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		14	
TOOL KIT TK-87/U			†	†	†	15	
TOOL KIT TK-115/G		†				16	
VOLTMETER, METER ME-30/U				†	†	17	
HETERODYNE VOLTMETER, BRUEL AND KJOER MODEL 2005					†	18	(CONUS 5th echelon depot only)
MULTIMETER TS-352/U			†	†	†	19	
TOOL KIT TK-88/U				†	†	20	
MODULE ELEMENT TEST SET					†	21	(For use at LEXINGTON SIGNAL DEPOT)

Section XII. MAINTENANCE ALLOCATION CHART, AN/VRC-46

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PART OR COMPONENT	MAINTENANCE FUNCTION	1ST ECH.	2ND ECH.	3RD ECH.	4TH ECH.	5TH ECH.	TOOLS REQUIRED	REMARKS
RADIO SET AN/VRC-46: (BASIC UNIT)	service		X				16	
	adjust			X			15	
	inspect	X						No facilities required
	test		X				5,6,14	
				X			7,8,9,10,11,14,19	Same tests
					X		1,2,3,4,7,8,9,10, 11,12,14,17,19	as those for RT-524/VRC
						X	1,2,3,4,7,8,9, 10,11,12,13,17, 18,19,21	
	repair	X						Limited to replacement of Running Spare Items
			X				16	Major component replacement and pluck out parts
				X			15	
					X		15,20	
	align			X			7,8,9,10,11,15	
	calibrate				X		1,2,3,4,7,8,10, 11,12,17	
	rebuild					X	15,20	
ANTENNA AT-912/VRC	replace		X				16	Separate MAC
ANTENNA MATCHING UNIT MX-2799/VRC	replace		X				16	p/o ANTENNA AT-912/VRC MAC
MOUNTING MT-1029/VRC	replace		X				16	Separate MAC
RECEIVER-TRANSMITTER, RADIO RT-524/VRC	replace		X					Separate MAC

Section XIII. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, AN/VRC-46

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH.	(3) 2ND ECH.	(4) 3RD ECH.	(5) 4TH ECH.	(6) 5TH ECH.	(7) TOOL CODE	(8) REMARKS
AN/VRC-46 (continued)							
ANALYZER, SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/U				†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
METER MODULATION ME-57/U				†	†	4	
MODULE TEST SET		†				5	
MULTIMETER AN/URM-105		†				6	
MULTIMETER, METER ME-26/U			†	†	†	7	
OSCILLOSCOPE AN/USM-50			†	†	†	8	
RF SIGNAL GENERATOR SET AN/URM-25			†	†	†	9	
RF WATTMETER AN/URM-120			†	†	†	10	
SIGNAL GENERATOR SG-297( )/U			†	†	†	11	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	12	
TEST SET, ELECTRON TUBE TV-2/U					†	13	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		14	
TOOL KIT TK-87/U			†	†	†	15	
TOOL KIT TK-115/G		†				16	
VOLTMETER, METER ME-30/U				†	†	17	
HETERODYNE VOLTMETER, BRUEL AND KJOER MODEL 2005					†	18	(CONUS 5th echelon depot only)
MULTIMETER TS-352/U			†	†	†	19	
TOOL KIT TK-88/U				†	†	20	
MODULE ELEMENT TEST SET					†	21	(For use at LEXINGTON SIGNAL DEPOT)

Section XIV. MAINTENANCE ALLOCATION CHART, AN/VRC-47

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RADIO SET AN/VRC-47: (BASIC UNIT)								
	service		X				16	
	adjust			X			15	
	inspect	X						No facilities required
	test		X				5,6,14	
				X			7,8,9,10,11,14,19	Same tests
					X		1,2,3,4,7,8,9,10,	as those
							11,12,14,17,19	for R-442/VRC and RT-524/VRC
						X	1,2,3,4,7,8,9,	
							10,11,12,13,17,	
							18,19,21	
	repair	X						Limited to replacement of Running Spare Items
			X				16	Major component replacement and pluck out parts
				X			15	
					X		15,20	
	align			X			7,8,9,10,11,15	
	calibrate				X		1,2,3,4,7,8,10,	
							11,12,17	
	rebuild					X	15,20	
ANTENNA AT-912/VRC	replace		X				16	Separate MAC
ANTENNA MATCHING UNIT MX-2799/VRC	replace		X				16	p/o ANTENNA AT-912/VRC MAC
CABLE ASSEMBLIES	replace		X				16	Easily accessible pluck out assemblies only.
				X			15	Others
BAG CW-206/GR	replace	X						(Bag for spare Mast Sections MS-116A, MS-117A, MS-118A.)
	repair					X		
MAST BASE AB-15/GR	replace		X				16	Separate MAC
MAST SECTIONS	replace	X						MS-116A, MS-117A, MS-118A
MOUNTING MT-1029/VRC	replace		X				16	Separate MAC
MOUNTING MT-1898/VRC	replace		X				16	Separate MAC
RECEIVER, RADIO R-442/VRC	replace		X				16	Separate MAC
RECEIVER-TRANSMITTER, RT-524/VRC	replace		X				16	Separate MAC

Section XV. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, AN/VRC-47

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH.	(3) 2ND ECH.	(4) 3RD ECH.	(5) 4TH ECH.	(6) 5TH ECH.	(7) TOOL CODE	(8) REMARKS
AN/VRC-47 (continued)							
ANALYZER, SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/U				†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
METER MODULATION ME-57/U				†	†	4	
MODULE TEST SET		†				5	
MULTIMETER AN/URM-105		†				6	
MULTIMETER, METER ME-26/U			†	†	†	7	
OSCILLOSCOPE AN/USM-50			†	†	†	8	
RF SIGNAL GENERATOR SET AN/URM-25			†	†	†	9	
RF WATTMETER AN/URM-120			†	†	†	10	
SIGNAL GENERATOR SG-297( )/U			†	†	†	11	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	12	
TEST SET, ELECTRON TUBE TV-2/U					†	13	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		14	
TOOL KIT TK-87/U			†	†	†	15	
TOOL KIT TK-115/G		†				16	
VOLTMETER, METER ME-30/U				†	†	17	
METERODYNE VOLTMETER, BRUEL AND KJOER MODEL 2005					†	18	(CONUS 5th echelon depot only)
MULTIMETER TS-352/U			†	†	†	19	
TOOL KIT TK-88/U				†	†	20	
MODULE ELEMENT TEST SET					†	21	(For use at LEXINGTON SIGNAL DEPOT)

Section XVI. MAINTENANCE ALLOCATION CHART, AN/VRC-48

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RADIO SET, AN/VRC-48: (BASIC UNIT)								
	service		X				16	
	adjust			X			15	
	inspect	X						No facilities required.
	test		X				5,6,14	
				X			2,7,8,9,10,11, 14,19	Same tests as those for
					X		1,2,3,4,7,8,9, 10,11,12,13,17, 18,19,21	R-442/VRC, RT-524/VRC
	repair	X						Limited to replacement of Running Spare Items
			X				16	Major component replacement
				X			15	
					X		15,20	
	align			X			7,8,9,10,11,15	
	calibrate				X		1,2,3,4,7,8,10, 11,12,17	
	rebuild					X	15,20	
ANTENNA AT-912/VRC	replace		X				16	Separate MAC
ANTENNA MATCHING UNIT MX-2799/VRC	replace		X				16	p/o ANTENNA AT-912/VRC MAC
CABLE ASSEMBLIES	replace		X				16	Easily accessible pluck out assemblies only
				X			15	Others
BAG CW-206/GR	replace	X						(Bag for spare Mast Sections MS-116A, MS117A, MS-118A.)
	repair					X		
MAST BASE AB-15/GR	replace		X				16	Separate MAC
MAST SECTIONS	replace	X						MS-116A, MS-117A, MS-118A
MOUNTING MT-1029/VRC	replace		X				16	Separate MAC
MOUNTING MT-1898/VRC	replace		X				16	Separate MAC
RECEIVER, RADIO R-442/VRC	replace		X				16	Separate MAC
RECEIVER-TRANSMITTER, RADIO RT-524/VRC	replace		X				16	Separate MAC

Section XVII. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, AN/VRC-48

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH.	(3) 2ND ECH.	(4) 3RD ECH.	(5) 4TH ECH.	(6) 5TH ECH.	(7) TOOL CODE	(8) REMARKS
AN/VRC-48 (continued)							
ANALYZER, SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/U				†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
METER, MODULATION ME-57/U				†	†	4	
MODULE TEST SET		†				5	
MULTIMETER AN/URM-105		†				6	
MULTIMETER METER ME-26/U			†	†	†	7	
OSCILLOSCOPE AN/USM-50			†	†	†	8	
RF SIGNAL GENERATOR SET AN/URM-25			†	†	†	9	
RF WATTMETER AN/URM-120			†	†	†	10	
SIGNAL GENERATOR SG-297( )/U			†	†	†	11	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	12	
TEST SET, ELECTRON TUBE TV-2/U					†	13	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		14	
TOOL KIT TK-87/U			†	†	†	15	
TOOL KIT TK-115/G		†				16	
VOLTMETER, METER ME-30/U				†	†	17	
HETERODYNE VOLTMETER, BRUEL AND KJOER MODEL 2005					†	18	(CONUS 5th echelon depot only)
MULTIMETER TS-352/U			†	†	†	19	
TOOL KIT TK-88/U				†	†	20	
MODULE ELEMENT TEST SET					†	21	(For use at LEXINGTON SIGNAL DEPOT)

Section XVIII. MAINTENANCE ALLOCATION CHART, AN/VRC-49

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RADIO SET AN/VRC-49; (BASIC UNIT)								
	service		X				16	
	adjust			X			15	
	inspect	X						No facilities required.
	test		X				5,6,14	
				X			7,8,9,10,11,14,19	Same Test as those
					X		1,2,3,4,7,8,9,10,	for RT-524/VRC
							11,12,14,15,17,19	
						X	1,2,3,4,7,8,9,	
							10,11,12,13,17,	
							18,19,21	
	repair	X						Limited to replacement of Running Spare Items.
			X				16	Major component replacement and pluck out parts.
				X			15	
					X		15,20	
	align			X			7,8,9,10,11,15	
	calibrate				X		1,2,3,4,7,8,11,	
							12,17	
	rebuild					X	15,20	
ANTENNA AT-912/VRC	replace		X				16	Separate MAC
ANTENNA MATCHING UNIT MX-2799/VRC	replace		X				16	p/o ANTENNA AT-912/VRC MAC
CABLE ASSEMBLIES	replace		X				16	Easily accessible pluck out assemblies only
				X			15	Others.
MOUNTING MT-1029/VRC	replace		X				16	Separate MAC
RECEIVER-TRANSMITTER, RADIO R-524/VRC	replace		X				16	Separate MAC
CONTROL, RADIO SET C-2299/VRC	replace		X				16	Separate MAC

Section XIX. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, AN/VRC-49

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
AN/VRC-49 (continued)							
ANALYZER, SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/U				†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
METER, MODULATION ME-57/U				†	†	4	
MODULE TEST SET		†				5	
MULTIMETER AN/URM-105		†				6	
MULTIMETER, METER ME-26/U			†	†	†	7	
OSCILLOSCOPE AN/USM-50			†	†	†	8	
RF SIGNAL GENERATOR SET AN/URM-25			†	†	†	9	
RF WATTMETER AN/URM-120			†	†	†	10	
SIGNAL GENERATOR SG-297( )/U			†	†	†	11	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	12	
TEST SET, ELECTRON TUBE TV-2/U					†	13	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		14	
TOOL KIT TK-87/U			†	†	†	15	
TOOL KIT TK-115/G		†				16	
VOLTMETER, METER ME-30/U				†	†	17	
HETERODYNE VOLTMETER, BRUEL AND KJOER MODEL 2005					†	18	(CONUS 5th echelon depot only)
MULTIMETER TS-352/U			†	†	†	19	
TOOL KIT TK-88/U				†	†	20	
MODULE ELEMENT TEST SET					†	21	(For use at LEXINGTON SIGNAL DEPOT)

Section XX. MAINTENANCE ALLOCATION CHART, AT-912/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
ANTENNA AT-912/VRC	service		X				1	
				X			2	
	inspect		X					No facilities required
	test		X				3	
				X			4	
	repair		X				1	Major component or pluck out parts replacement only.
				X			2	
	rebuild					X	2	
ANTENNA ELEMENT AT-1095/VRC	replace		X				1	
ANTENNA ELEMENT AT-1096/VRC	replace		X				1	
	repair			X			2	
	overhaul					X	2	
ANTENNA MATCHING UNIT MX-2799/VRC	replace		X					
	repair		X				1	Replacing pluck out parts and impedance matching networks.
	repair			X			2	
	rebuild					X	2	
ANTENNA MATCHING UNIT SUBASSEMBLY	replace			X			2	AVCO part 800084
	repair			X			2	Replacement of Connector, Coil L552 and coil Mtg block.
BASE, ANTENNA SUPPORT AB-719/VRC	replace		X				1	
	repair			X			2	
	rebuild					X	2	

Section XXI. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, AT-912/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH.	(3) 2ND ECH.	(4) 3RD ECH.	(5) 4TH ECH.	(6) 5TH ECH.	(7) TOOL CODE	(8) REMARKS
AT-912/VRC (continued)							
TOOL EQUIPMENT TK-115/U		†				1	
TOOL EQUIPMENT TK-87/U			†	†	†	2	
MULTIMETER AN/URM-105		†				3	
MULTIMETER TS-352/U			†	†	†	4	

Section XXII. MAINTENANCE ALLOCATION CHART, C-2742/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
CONTROL, FREQUENCY SELECTOR C-2742/VRC	service		X				3	
				X			4	
	inspect	X						No facilities required
	test		X				1	
				X			2	
	repair		X				3	Pluck out parts and relays
				X			4	
	rebuild					X	4	

Section XXIII. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, C-2742/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH.	(3) 2ND ECH.	(4) 3RD ECH.	(5) 4TH ECH.	(6) 5TH ECH.	(7) TOOL CODE	(8) REMARKS
C-2742/VRC (continued)							
MULTIMETER AN/URM-105		†				1	
MULTIMETER, METER ME-26/U			†	†	†	2	
TOOL EQUIPMENT TK-115/U		†				3	
TOOL EQUIPMENT TK-87/U			†	†	†	4	

Section XXIV. MAINTENANCE ALLOCATION CHART, C-2296/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
CONTROL, INTERCOMMUNICATION SET C-2296/VRC								
	service		X				1	
				X			2	
	test		X				3	
				X			4	
	repair		X				1	Pluck out Module and Handset replacement
				X			2	
	rebuild					X	2	
AMPLIFIER, AUDIO FREQUENCY: (Module)	replace		X				1	ABO
	overhaul					X	2	
HANDSET H-207/VRC	replace		X				1	
	repair			X			2	
	rebuild					X	2	

Section XXV. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, C-2296/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
C-2296/VRC (continued)							
TOOL EQUIPMENT TK-115/U		†				1	
TOOL EQUIPMENT TK-87/U			†	†	†	2	
MULTIMETER AN/URM-105		†				3	
MULTIMETER TS-352/U			†	†	†	4	

Section XXVI. MAINTENANCE ALLOCATION CHART, C-2297/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
CONTROL, INTERCOMMUNICATION SET C-2297/VRC								
	service		X				1	
				X			2	
	inspect	X						No facilities required
	test		X				3	
				X			4	
	repair	X						Limited to replacement of Running Spare Lamps
			X				1	Pluck out parts and Module replacement.
				X			2	
	rebuild					X	2	
AMPLIFIER, AUDIO FREQUENCY: (Module)	replace		X				1	A80
	overhaul					X	2	

Section XXVII. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, C-2297/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
C-2297/VRC (continued)							
TOOL EQUIPMENT TK-115/U		†				1	
TOOL EQUIPMENT TK-87/U			†	†	†	2	
MULTIMETER AN/URM-105		†				3	
MULTIMETER, METER ME-26/U			†	†	†	4	

Section XXVIII. MAINTENANCE ALLOCATION CHART, C-2298/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
CONTROL, INTERCOMMUNICATION SET C-2298/VRC	service		X				1	
				X			2	
	inspect		X					No facilities required
	test		X				3	
				X			4	
	repair		X				1	Pluck out parts and Module replacement.
				X			2	
	rebuild					X	2	
AMPLIFIER, AUDIO FREQUENCY: (Module)	replace		X				1	A80
	overhaul					X	2	

Section XXIX. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, C-2298/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
C-2298/VRC (continued)							
TOOL EQUIPMENT TK-115/U		+				1	
TOOL EQUIPMENT TK-87/U			+	+	+	2	
MULTIMETER AN/URM-105		+				3	
MULTIMETER, METER ME-26/U			+	+	+	4	

Section XXX. MAINTENANCE ALLOCATION CHART, C-2299/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
CONTROL. RADIO SET C-2299/VRC	service		X				5	
				X			6	
	inspect	X						No facilities required
	test		X				3,5	
				X			4,6	
					X		1,2,4,6	
	replace		X				5	
	repair		X				5	Pluck out parts and module replacement
				X			6	
	rebuild					X	6	
AMPLIFIER, AUDIO FREQUENCY: (Module)	replace		X				5	A80
	overhaul					X	6	

Section XXXI. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, C-2299/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
C-2299/VRC (continued)							
AUDIO OSCILLATOR TS-382/U				+	+	1	
VOLTMETER, METER ME-30/U				+	+	2	
MULTIMETER AN/URM-105		+				3	
MULTIMETER, METER ME-26/U			+	+	+	4	
TOOL EQUIPMENT TK-115/U		+				5	
TOOL EQUIPMENT TK-87/U			+	+	+	6	

Section XXXII. MAINTENANCE ALLOCATION CHART, MT-1029/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
MOUNTING MT-1029/VRC: (For Receiver-Transmitters RT-246/VRC or RT-524/VRC)								
	service		X				1	
				X			2	
	test		X				4	
				X			3	
	repair		X				1	Fuse link replacement only.
				X			2	
	rebuild					X	2	

Section XXXIII. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS. MT-1029/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
MT-1029/VRC (continued)							
TOOL EQUIPMENT TK-115/U		+				1	
TOOL EQUIPMENT TK-87/U			+	+	+	2	
MULTIMETER, METER ME-26/U			+	+	+	3	
MULTIMETER AN/URM-105		+				4	

Section XXXIV. MAINTENANCE ALLOCATION CHART, MT-1898/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
MOUNTING MT-1898/VRC: (For Receiver R-442/VRC)								
	service		X				4	
				X			3	
	inspect		X					No facilities required
	test		X				1	
				X			2	
	repair		X				4	Fuse link replacement only.
				X			3	
	rebuild					X	3	

Section XXXV. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, MT-1898/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
MT-1898/VRC (continued)							
MULTIMETER AN/URM-105		+				1	
MULTIMETER, METER ME-26/U			+	+	+	2	
TOOL KIT TK-87/U			+	+	+	3	
TOOL KIT TK-115/U		+				4	

Section XXXVI. MAINTENANCE ALLOCATION CHART, R-442/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RECEIVER, RADIO R-442/VRC								
	service		X				14	
	adjust			X			13	
	inspect		X					No facilities required
	test		X				4,5,12	Continuity
				X			6,7,8,9,12,16	Continuity, voltage, resistance, sensitivety audio output.
					X		1,2,3,6,7,8,9, 10,12,15,16	Same as for 3rd plus selectivety, audio fidelity, distortion, limiting.
						X	1,2,3,6,7,8,9, 10,11,15,16,17,19	Plus test fixture sets for Servo Amplifier plus all tests as those in 4th echelon.
	repair	X						Limited to replacement of Running Spare Lamps
			X				14	Pluck out parts and Modules.
				X			13	
					X		13,18	
	align			X			6,7,8,9,13	
	calibrate				X		3,6,7,9,15	
	rebuild					X	13,18	
	overhaul				X			Subassemblies as listed herein
						X		Module Group - See Supply Bulletin SB11-525
CABLE ASSEMBLIES	replace		X				14	Pluck out assemblies only
				X			13	Others
CRYSTAL SWITCH ASSEMBLY	test					X	19	
	replace			X			13	A2000
	rebuild					X	13,18	
	overhaul				X		13,18	
GEAR TRAINS	replace				X		13,18	
	overhaul					X	13,18	Maintain by cannibalization
PARENT BOARDS: (Less Modules)	replace			X			13	C.R.S., I. F., AUDIO
	overhaul				X		13,18	
VHF TUNER CASE: (Less Plug In Boards)	replace			X			13	A1000
	rebuild					X	13,18	
	overhaul				X		13,18	
MODULE GROUP								
REFER TO SUPPLY BULLETIN SB 11-525 "OPERATION MODEX-MODULE STUDY FOR RADIO SETS AN/VRC-12, AN/VRC-43 THRU AN/VRC-49"								

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
R-442/VRC (continued)								
RECEIVER, SUBASSEMBLY: (Antenna Board)	test					X		plus Test fixture set for Antenna board.
	replace			X			13	A1100 (Use Removal Tool MTD on Tuner Group)
	align					X		plus Test fixture set for Antenna board.
	overhaul					X		
AMPLIFIER, RADIO FREQUENCY: (First R. F. Board)	test					X		plus Test fixture set for 1st R.F.
	replace			X			13	A1200 (Use Removal Tool MTD on Tuner Cover)
	align					X		plus Test fixture set for 1st R. F.
	overhaul					X		
AMPLIFIER, RADIO FREQUENCY: (Second R. F. Board)	test					X		plus Test fixture set for 2nd R.F.
	replace			X			13	A1300 (Use Removal Tool MTD on Tuner Cover)
	align					X		plus Test fixture set for 2nd R. F.
	overhaul					X		
MIXER STAGE, FREQUENCY: (Mixer Board)	test					X		plus Test fixture set for mixer
	replace			X			13	A1400 (Use Removal Tool MTD on Tuner Cover)
	align					X		plus Test fixture set for mixer
	overhaul					X		
OSCILLATOR, RADIO FREQUENCY: (Local Oscillator Board)	test					X		plus Test fixture set for local oscillator
	replace			X			13	A1500 (Use Removal Tool MTD on Tuner Cover)
	align					X		plus Test fixture set for local oscillator
	overhaul					X		
POWER SUPPLY, BOARD: (105 Volt DC Supply)	test		X				5	
	replace		X				14	A1600
	overhaul					X		
RADIO RECEIVER, SUBASSEMBLY: (16 vdc Regulated Supply)	test					X	19	
			X				4	
	replace		X				14	A2100
	overhaul					X		
OSCILLATOR, RADIO FREQUENCY: (CRS Harmonic Generator)	test					X	19	plus Test fixture set for Harmonic Generator
			X				4	
	replace		X				14	A3100
	align					X		plus Test fixture set for Harmonic Generator
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
R-442/VRC (continued)								
AMPLIFIER-MIXER: (CRS Balance Mixer)	test					X	19	plus Test fixture set for Balanced miser
			X				4	
	replace		X				14	A3200
	align					X		plus Test fixture set for Balanced mixer
	overhaul					X		
MIXER STAGE, FREQUENCY: (CRS Second mixer)	test					X	19	plus Test fixture set for 2nd mixer
			X				4	
	replace		X				14	A3300
	align					X		plus Test fixture set for 2nd mixer
	overhaul					X		
AMPLIFIER, INTERMEDIATE FREQUENCY: (CRS First and Second IF)	test					X	19	
			X				4	
	replace		X				14	A3400
	overhaul					X		
AMPLIFIER-LIMITER: (CRS Third IF and Limiter)	test					X	19	plus Test fixture set for 3rd IF and Limiter
			X				4	
	replace		X				14	A3500
	align					X		plus Test fixture set for 3rd IF and Limiter
	overhaul					X		
CONTROL, ELECTRICAL FREQUENCY: (CRS Hunt Discriminator)	test					X	19	plus Test fixture set for Hunt discriminator
			X				4	
	replace		X				14	A3600
	align					X		plus Test fixture set for Hunt discriminator
	overhaul					X		
CONTROL, ELECTRICAL FREQUENCY: (CRS Phase Discriminator)	test					X	19	plus Test fixture set for Phase discriminator
			X				4	
	replace		X				14	A3700
	align					X		plus Test fixture set for Phase discriminator
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
R-442/VRC (continued)								
AMPLIFIER, INTERMEDIATE FREQUENCY: (Receiver First and Second IF)	test					X	19	plus Test fixture set for 1st and 2nd IF Amplifier
			X				4	
	replace		X				14	A4100
	align					X		plus Test fixture set for 1st and 2nd IF Amplifier
	overhaul					X		
AMPLIFIER-DISCRIMINATOR: (Receiver Third, Fourth and Fifth IF Limiter and Discriminator)	test					X	19	plus Test fixture set for 3rd, 4th, and 5th IF Amplifier
			X				4	
	replace		X				14	A4200
	align					X		plus Test fixture set for 3rd, 4th, and 5th IF Amplifier
	overhaul					X		
AMPLIFIER, AUDIO FREQUENCY: (Audio and Squelch Preamplifier)	test					X	19	plus Test fixture set for Amplifier, audio Frequency
			X				4	
	replace		X				14	A4300
	align					X		plus Test fixture set for amplifier, audio Frequency
	overhaul					X		
AMPLIFIER, AUDIO FREQUENCY; (Audio Amplifier)	test					X	19	plus test fixture set for amplifier, audio frequency
			X				4	
	replace		X				14	A5100
	align					X		plus test fixture set for amplifier, audio frequency
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
R-442/VRC (continued)								
AMPLIFIER, DIRECT CURRENT; (Squelch Amplifier)	test					X	19	plus test fixture set for amplifier dc(squelch)
			X				4	
	replace		X				14	A5200
	align					X		plus test fixture set for amplifier dc(squelch)
	overhaul					X		
FILTER, BAND PASS: (Squelch Filter)	test					X	19	plus test fixture set for squelch filter
			X				4	
	replace		X				14	A5300
	align					X		plus test fixture set for squelch filter
	overhaul					X		
FILTER, LOW PASS:	replace			X			13	FL3001
	repair							(Sealed unit - Not repairable)
FILTER, HIGH PASS	replace			X			13	FL3002
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (53 mc)	replace			X			13	FL3003
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (5.625 mc)	replace			X			13	FL3004, FL3005
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (11.5 mc Crystal Filter-Narrow Band)	replace		X				14	FL4001 (Narrow Band)
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (11.5 mc Crystal Filter-Wide Band)	replace		X				14	FL4001 (Wide Band)
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (11.5 mc Crystal Filter)	replace		X				14	FL4002
	repair							(Sealed unit - Not repairable)

Section XXXVII. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, R-442/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST FCH	(3) 2ND FCH	(4) 3RD FCH	(5) 4TH FCH	(6) 5TH FCH	(7) TOOL CODE	(8) REMARKS
R-442/VRC (continued)							
ANALYZER SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/U				†	†	2	
FREQUENCY METER AN/USM-26			†	†	3		
MODULE TEST SET		†				4	
MULTIMETER AN/URM-105		†				5	
MULTIMETER, METER ME-26/U			†	†	†	6	
OSCILLOSCOPE AN/USM-50			†	†	†	7	
R.F. SIGNAL GENERATOR SET AN/URM-25			†	†	†	8	
SIGNAL GENERATOR SG-297( )/U			†	†	†	9	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	10	
TEST SET ELECTRON TUBE TV-2/U					†	11	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		12	
TOOL KIT TK-87/U			†	†	†	13	
TOOL KIT TK-115/G		†				14	
VOLTMETER, METER ME-30/U				†	†	15	
MULTIMETER TS-352/U			†	†	†	16	
HETORDYNE VOLTMETER, BRUEL AND KJOER MODEL 2005					†	17	(CONUS 5th echelon Depot only)
TOOL KIT TK-88/U				†	†	18	
MODULE ELEMENT TEST SET					†	19	(For use at LEXINGTON SIGNAL DEPOT)

Section XXXVIII. MAINTENANCE ALLOCATION CHART, RT-246/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RECEIVER-TRANSMITTER, RADIO RT-246/VRC								
	service		X				16	
	adjust			X			15	
	inspect	X						No facilities required
	test		X				5,6,14	Continuity
				X			7,8,9,10,11,14,19	Continuity, voltage, resistance, sensitivety, Power output (transmitter)
					X		1,2,3,4,7,8,9,10, 11,12,14,17,19	Same as 3rd plus selectivety, audio power and fidelity, modulation, distortion limiting
						X	1,2,3,4,7,8,9, 10,11,12,13,17, 18,19,21	Plus test fixture sets for servo Amplifier and same tests as for 4th echelon
	repair	X						Limited to replacement of Running Spare Lamps
			X				16	Pluck out parts and Modules
				X			15	
					X		15,20	
	align			X			7,8,9,10,11,15	
	calibrate				X		1,2,3,4,7,8,10, 11,12,17	
	rebuild					X	15,20	
	overhaul				X			Subassemblies as listed herein
						X		Module Group - See Supply Bulleting SB11-525
CABLE ASSEMBLIES	replace		X				16	Pluck out assemblies only
				X			15	Others
CRYSTAL SWITCH ASSEMBLY	test					X	21	
	replace			X			15	A2000
	rebuild					X	15,20	
	overhaul				X		15,20	
DRIVER ASSEMBLY	test					X		Plus Test fixture set for driver assembly
	repair			X			15	A6100
	align					X		Plus Test fixture set for driver assembly
DRIVER, TUNER	replace			X			15	L6109 P/O Driver Assembly A6100
GEAR TRAINS	replace				X		15,20	
	overhaul					X	15,20	Maintain by cannibilization

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RT-246/VRC (continued)								
OSCILLATOR-BUFFER CASE: (Less Plug in Boards)	test					X		Plus Test fixture sets for Oscillator Board and Buffer Boards
	replace			X			15	A6000
	align					X		Plus Test fixture sets for Oscillator Board and Buffer Board
	rebuild					X	15,20	
	overhaul				X		15,20	
PARENT BOARDS: (Less Modules)	replace			X			15	CRS, IF, Modulator, Audio
	overhaul				X		15,20	
POWER SUPPLY ASSEMBLY	replace		X				16	A9000
	repair		X				16	Limited to replacing pluck out relays
				X			15	Replacing test circuit printed board
	rebuild					X	15,20	
	overhaul				X		15,20	
PUSHBUTTON, ASSEMBLY	replace			X			15	A7001
	rebuild					X	15,20	
	overhaul				X		15,20	
VHF TUNER CASE: (Less Plug in Boards)	replace			X			15	A1000
	rebuild					X	15,20	
	overhaul				X		15,20	
MODULE GROUP								
REFER TO SUPPLY BULLETIN SB11-525 "OPERATION MODEX-MODULE STUDY FOR RADIO SETS AN/VRC-12, AN/VRC-43 THRU AN/VRC-49								
RECEIVER, SUBASSEMBLY: (Antenna Board)	test					X		Plus Test fixture set for Antenna Board
	replace			X			15	A1100 (Use removal tool MTD on Tuner Cover)
	align					X		Plus Test fixture set for Antenna Board
	overhaul					X		
AMPLIFIER, RADIO FREQUENCY: (First R.F. Board)	test					X		Plus Test fixture set for 1st RF Board
	replace			X			15	A1200 (Use removal tool MTD on Tuner Cover)
	align					X		Plus Test fixture set for 2nd RF Board
	overhaul					X		
AMPLIFIER, RADIO FREQUENCY: (Second R.F. Board)	test					X		Plus Test fixture set for 2nd RF Board
	replace			X			15	A1300 (Use removal tool MTD on Tuner Cover)
	align					X		Plus Test fixture set for 2nd RF Board
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
RT-246/VRC (continued)								
MIXER STAGE, FREQUENCY: (Mixer Board)	test					X		Plus Test fixture set for Mixer stage
	replace			X			15	A1400 (Use removal tool MTD on Tuner Cover)
	overhaul					X		
OSCILLATOR, RADIO FREQUENCY: (Local Oscillator Board)	test					X		Plus Test fixture set for local Oscillator
	replace			X			15	A1500 (Use removal tool MTD on Tuner Cover)
	align					X		Plus Test fixture set for local Oscillator
	overhaul					X		
POWER SUPPLY BOARD: (105 Volt DC Supply)	test		X				6	
						X	21	
	replace		X				16	A1600
	overhaul					X		
RADIO RECEIVER, SUBASSEMBLY: (16 vdc Regulated Supply)	test		X				5	
						X	21	
	replace		X				16	A2100
	overhaul					X		
OSCILLATOR, RADIO FREQUENCY: (CRS Harmonic Generator)	test					X	21	Plus Test fixture set for Harmonic Generator
			X				5	
	replace		X				16	A3100
	align					X		Plus Test fixture set for Harmonic Generator
	overhaul					X		
AMPLIFIER-MIXER: (CRS Balance Mixer)	test					X	21	Plus Test fixture set for balanced Mixer
			X				5	
	replace		X				16	A3200
	align					X		Plus Test fixture set for balanced Mixer
	overhaul					X		
MIXER STAGE, FREQUENCY: (CRS Second Mixer)	test					X	21	Plus Test fixture set for 2nd Mixer
			X				5	
	replace		X				16	A3300
	align					X		Plus Test fixture set for 2nd Mixer
	overhaul					X		
AMPLIFIER, INTERMEDIATE FREQUENCY: (CRS First and Second IF)	test					X	21	
			X				5	
	replace		X				16	A3400
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RT-246/VRC (continued)								
AMPLIFIER-LIMITER: (CRS Third IF and Limiter)	test					X	21	Plus Test fixture set for 3rd IF and Limiter
			X				5	
	replace		X				16	A3500
	align					X		Plus Test fixture set for 3rd IF and Limiter
	overhaul					X		
CONTROL, ELECTRICAL FREQUENCY: (CRS Hunt Discriminator)	test					X	21	Plus Test fixture set for Hunt Discriminator
			X			5		
	replace		X				16	A3600
	align					X		Plus Test fixture set for Hunt Discriminator
	overhaul					X		
CONTROL, ELECTRICAL FREQUENCY: (CRS Phase Discriminator)	test					X	21	Plus Test fixture set for Phase Discriminator
			X				5	
	replace		X				16	A3700
	align					X		Plus Test fixture set for Phase Discriminator
	overhaul					X		
AMPLIFIER, INTERMEDIATE FREQUENCY: (Receiver First and Second IF)	test					X	21	Plus Test fixture set for 1st and 2nd IF Amplifier
			X				5	
	replace		X				16	A4100
	align					X		Plus Test fixture set for 1st and 2nd IF Amplifier
	overhaul					X		
AMPLIFIER-DISCRIMINATOR: (Receiver Third, Fourth and Fifth IF Limiter and Discriminator	test					X	21	Plus Test fixture set for 3rd, 4th, and 5th IF Limiter and Discriminator
			X				5	
	replace		X				16	A4200
	align					X		Plus Test fixture set for 3rd, 4th, and 5th IF Limiter and Discriminator
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RT-246/VRC (continued)								
AMPLIFIER, AUDIO FREQUENCY: (Audio and Squelch Preamplifier)	test					X	21	Plus Test fixture set for Audio and Squelch Preamplifier
			X				5	
	replace		X				16	A4300
	align					X		Plus Test fixture set for Audio and Squelch Preamplifier
	overhaul					X		
AMPLIFIER, AUDIO FREQUENCY: (Audio Amplifier)	test					X	21	Plus Test fixture set for Audio Amplifier
			X				5	
	replace		X				16	A5100
	align					X		Plus Test fixture set for Audio Amplifier
	overhaul					X		
AMPLIFIER, DIRECT CURRENT: (Squelch Amplifier)	test					X	21	Plus Test fixture set for Squelch Amplifier
			X				5	
	replace		X				16	A5200
	align					X		Plus Test fixture set for Squelch Amplifier
	overhaul					X		
FILTER, BAND PASS: (Squelch Filter)	test					X	21	Plus Test fixture set for Squelch Filter
			X				5	
	replace		X				16	A5300
	align					X		Plus Test fixture set for Squelch Filter
	overhaul					X		
OSCILLATOR, RADIO FREQUENCY: (Master Oscillator Board)	test					X		Plus Test fixture set for Oscillator Board
	replace			X			15	A6300 (Use removal tool MTD on Oscillator-Buffer Case Cover)
	align					X		Plus Test fixture set for Oscillator Board
	overhaul					X		
AMPLIFIER, SUBASSEMBLY: (Buffer Board)	test					X		Plus Test fixture board for Buffer Board
	replace			X			15	A6400 (Use removal tool MTD on Oscillator-Buffer Coase Cover)
	align					X		Plus Test fixture board for Buffer Board
	overhaul					X		
RECEIVER-TRANSMITTER, SUBASSEMBLY: (Null Switch)	replace		X				16	A7000
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RT-246/VRC (continued)								
AMPLIFIER, ELECTRONIC CONTROL: (Servo Amplifier)	test					X	21	Plus Test fixture set for Servo Amplifier
	replace			X			15	A7200
	align					X		Plus Test fixture set for Servo Amplifier
	overhaul					X		
MODULATOR, RADIO TRANSMITTER: (Modulator)	test					X	21	Plus Test fixture set for 11.5 mc Modulator
			X				5	
	replace		X				16	A8100
	align					X		Plus Test fixture set for 11.5 mc Modulator
	overhaul					X		
CONTROL, ELECTRICAL FREQUENCY: (Transmitter Phase Discriminator)	test					X	21	Plus Test fixture set for Phase Discriminator
			X				5	
	replace		X				16	A8200
	align					X		Plus Test fixture set for Phase Discriminator
	overhaul					X		
AMPLIFIER, INTERMEDIATE FREQUENCY: (Transmitter First and Second IF)	test					X	21	Plus Test fixture set for Modulator 1st and 2nd IF
			X				5	
	replace		X				16	A8300
	align					X		Plus Test fixture set for Modulator 1st and 2nd IF
	overhaul					X		
CONTROL, ELECTRICAL FREQUENCY: (Transmitter Hunt Generator)	test					X	21	Plus Test fixture set for Hunt Generator
			X				5	
	replace		X				16	A8400
	align					X		Plus Test fixture set for Hunt Generator
	overhaul					X		
AMPLIFIER, AUDIO FREQUENCY: (Speech Amplifier)	test					X	21	Plus Test fixture set for Speech Amplifier
			X				5	
	replace		X				16	A8500
	align					X		Plus Test fixture set for Speech Amplifier
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RT-246/VRC (continued)								
FILTER, LOW PASS: (Antenna Filter)	test					X		Plus Test fixture set for Antenna Filter
	replace		X				16	FL401
	repair							Sealed unit - Not repairable
	align					X		Plus Test fixture set for Antenna Filter
FILTER, LOW PASS	replace			X			15	FL3001
	repair							(Sealed unit - Not repairable)
FILTER, HIGH PASS	replace			X			15	FL3002
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (53 mc)	replace			X			15	FL3003
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (5.625 mc)	replace			X			15	FL3004, FL3005
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (11.5 mc Crystal Filter-Narrow Band)	replace		X				16	FL4001 (Narrow Band)
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (11.5 mc Crystal Filter-Wide Band)	replace		X				16	FL4001 (Wide Band)
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (11.5 mc Crystal Filter)	replace		X				16	FL4002
	repair							(Sealed unit - Not repairable)

Section XXXIX. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, RT-246/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
RT-246/VRC (continued)							
ANALYZER, SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/G				†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
METER MODULATION ME-57/U				†	†	4	
MODULE TEST SET		†				5	
MULTIMETER AN/URM-105		†				6	
MULTIMETER, METER ME-26/U			†	†	†	7	
OSCILLOSCOPE AN/USM-50			†	†	†	8	
R.F. SIGNAL GENERATOR SET AN/URM-25			†	†	†	9	
R.F. WATTMETER AN/URM-120			†	†	†	10	
SIGNAL GENERATOR SG-297( )/U			†	†	†	11	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	12	
TEST SET ELECTRON TUBE TV-2/U					†	13	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		14	
TOOL KIT TK-87/U			†	†	†	15	
TOOL KIT TK-115/G		†				16	
VOLTMETER, METER ME-30/U				†	†	17	
HETERODYNE VOLTMETER, BRUEL AND KJOER MODEL 2005					†	18	(CONUS 5th echelon Depot only)
MULTIMETER TS-352/U			†	†	†	19	
TOOL KIT TK-88/U				†	†	20	
MODULE ELEMENT TEST SET					†	21	(For use at LEXINGTON SIGNAL DEPOT)

Section XXXX. MAINTENANCE ALLOCATION CHART, RT-524/VRC

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RECEIVER-TRANSMITTER, RADIO RT-524/VRC	service		X				16	
	adjust			X			15	
	inspect	X						No facilities required
	test		X				5,6,14	Continuity
				X			7,8,9,10,11,14,19	Continuity, voltage, resistance, sensitivety Power output (transmitter)
					X		1,2,3,4,7,8,9,10, 11,12,14,15,17,19	Same as 3rd plus selectivety, audio power and fidelity, modulation, distortion limiting
						X	1,2,3,4,7,8,9, 10,11,12,13,17, 18,19,21	Plus test fixture sets for Servo Amplifier
						X		Same tests as for 4th plus all other tests
	repair	X						Limited to replacement of Running Spare Lamps
			X				16	Pluck out parts and Modules
				X			15	
					X		15,20	
	align			X			7,8,9,10,11,15	
	calibrate				X		1,2,3,4,7,8,10, 11,12,17	
	rebuild					X	15,20	
	overhaul				X			Subassemblies as listed herein
						X		Module Group - See Supply Bulletin SB11-525
CABLE ASSEMBLIES	replace		X				16	Pluck out assemblies only
				X			15	Others
CRYSTAL, SWITCH ASSEMBLY	test					X	21	
	replace			X			15	A2000
	rebuild					X	15.20	
	overhaul				X		15,20	
DRIVER, ASSEMBLY	test					X		Plus Test Fixture Set for Driver Assembly
	repair			X			15	A6100
	align					X		Plus Test fixture set for Driver Assembly
DRIVER, TUNER	replace			X			15	L6109 P/O Driver Assembly A6100
GEAR, TRAINS	replace				X		15,20	
	overhaul					X	15,20	Maintain by cannibilization

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RT-524/VRC (continued)								
OSCILLATOR-BUFFER CASE: (Less Plug in Boards)	test					X		Plus Test fixture sets for Oscillator Board and Buffer Boards
	replace			X			15	A6000
	align					X		Plus Test fixture sets for Oscillator Board and Buffer Boards
	rebuild					X	15,20	
	overhaul				X		15,20	
PARENT BOARDS: (Less Modules)	replace			X			15	CRS, IF, Modulator, Audio
	overhaul				X		15.20	
POWER SUPPLY ASSEMBLY	replace		X				16	A9000
	repair		X				16	Limited to replacing pluck out relays
				X			15	Replacing test circuit printed board
	rebuild					X	15,20	
	overhaul				X		15.20	
VHF TUNER CASE: (Less Plug in Boards)	replace			X			15	A1000
	rebuild					X	15.20	
	overhaul				X		15,20	
MODULE GROUP								
REFER TO SUPPLY BULLETIN SB11-525 " OPERATION MODEX-MODULE STUCY FOR RADIO SETS AN/VRC-12, AN/VRC-43 THRU AN/VRC-49								
RECEIVER, SUBASSEMBLY: (Antenna Board)	test					X		Plus Test fixture set for Antenna Board
	replace			X			15	A1100 (Use removal tool MTD on Tuner Case)
	align					X		Plus Test fixture set for Antenna Board
	overhaul					X		
AMPLIFIER, RADIO FREQUENCY: (First R. F. Board)	test					X		Plus Test fixture set for 1st RF stage
	replace			X			15	A1200 (Use removal tool MTD on Tuner Cover)
	align					X		Plus Test fixture set for 1st RF stage
	overhaul					X		
AMPLIFIER, RADIO FREQUENCY: (Second R.F. Board)	test					X		Plus Test fixture set for 2nd RF stage
	replace			X			15	A1300 (Use removal tool MTD on Tuner Cover)
	align					X		Plus Test fixture set for 2nd RF stage
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
RT-524/VRC (continued)								
MIXER STAGE, FREQUENCY: (Mixer Board)	test					X		Plus Test fixture set for mixer stage
	replace			X				A1400 (Use removal tool MTD on Tuner Case)
	align					X		Plus Test fixture set for mixer stage
	overhaul					X		
OSCILLATOR, RADIO FREQUENCY: (Local Oscillator Board)	test					X		Plus Test fixture set for local oscillator
	replace			X			15	A1500 (Use removal tool MTD on Tuner Cover)
	align					X		Plus Test fixture set for local oscillator
	overhaul					X		
POWER SUPPLY, BOARD: (105 Volt DC Supply)	test		X				6	
						X	21	
	replace		X				16	A1600
	overhaul					X		
RADIO RECEIVER, SUBASSEMBLY: (16 vdc Regulated Supply)	test		X				5	
						X	21	
	replace		X				16	A2100
	overhaul					X		
OSCILLATOR, RADIO FREQUENCY: (CRS Harmonic Generator)	test					X	21	Plus Test fixture set for Harmonic Generator
			X				5	
	replace		X				16	A3100
	align					X		Plus Test fixture set for Harmonic Generator
	overhaul					X		
AMPLIFIER-MIXER: (CRS Balance Mixer)	test					X	21	Plus Test fixture set for Balanced Mixer
			X				5	
	replace		X				16	A3200
	align					X		Plus Test fixture set for Balanced Mixer
	overhaul					X		
MIXER STAGE, FREQUENCY: (CRS Second Mixer)	test					X	21	Plus Test fixture set for 2nd mixer
			X				5	
	replace		X				16	A3300
	align					X		Plus Test fixture set for 2nd mixer
	overhaul					X		
AMPLIFIER, INTERMEDIATE FREQUENCY: (CRS First and Second IF)	test					X	21	
			X				5	
	replace		X				16	A3400
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RT-524/VRC (continued)								
AMPLIFIER-LIMITER: (CRS Third IF and Limiter)	test					X	21	Plus Test fixture set for 3rd IF Amp and limiter
			X				5	
	replace		X				16	A3500
	align					X		Plus Test fixture set for 3rd IF amp and limiter
	overhaul					X		
CONTROL, ELECTRICAL: FREQUENCY: (CRS Hunt Discriminator)	test					X	21	Plus Test fixture set for Hunt Discriminator
			X				5	
	replace		X				16	A3600
	align					X		Plus Test fixture set for Hunt Discriminator
	overhaul					X		
CONTROL, ELECTRICAL FREQUENCY: (CRS Phase Discriminator)	test					X	21	Plus Test fixture set for Phase Discriminator
			X				5	
	replace		X				16	A3700
	align					X		Plus Test fixture set for Phase Discriminator
	overhaul					X		
AMPLIFIER, INTERMEDIATE FREQUENCY: (Receiver First and Second IF)	test					X	21	Plus Test fixture set for 1st and 2nd IF Amplifier
			X				5	
	replace		X				16	A4100
	align					X		Plus Test fixture set for 1st and 2nd IF Amplifier
	overhaul					X		
AMPLIFIER-DISCRIMINATOR: (Receiver Third, Fourth and Fifth IF Limiter and Discriminator)	test					X	21	Plus Test fixture set for 3rd, 4th, 5th IF, limiter and discriminator
			X				5	
	replace		X				16	A4200
	align					X		Plus Test fixture set for 3rd, 4th, 5th IF, limiter and discriminator
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RT-524/VRC (continued)								
AMPLIFIER, AUDIO FREQUENCY: (Audio and Squelch Preamplifier)	test					X	21	Plus Test fixture set for Audio and Squelch preamplifier
			X				5	
	replace		X				16	A4300
	align					X		Plus Test fixture set for Audio and Squelch preamplifier
	overhaul					X		
AMPLIFIER, AUDIO FREQUENCY: (Audio Amplifier)	test					X	21	Plus Test fixture set for Audio Amplifier
			X				5	
	replace		X				16	A5100
	align					X		Plus Test fixture set for Audio Amplifier
	overhaul					X		
AMPLIFIER, DIRECT CURRENT: (Squelch Amplifier)	test					X	21	Plus Test fixture set for Squelch Amplifier
			X				5	
	replace		X				16	A5200
	align					X		Plus Test fixture set for Squelch Amplifier
	overhaul					X		
FILTER, BAND PASS: (Squelch Filter)	test					X	21	Plus Test fixture set for Squelch Filter
			X				5	
	replace		X				16	A5300
	align					X		Plus Test fixture set for Squelch Filter
	overhaul					X		
OSCILLATOR, RADIO FREQUENCY: (Master Oscillator Board)	test					X		Plus Test fixture set for Oscillator Board
	replace			X			15	A6300 (Use removal tool MTD on Oscillator-Buffer Case Cover)
	align					X		Plus Test fixture set for Oscillator Board
	overhaul					X		
AMPLIFIER, SUBASSEMBLY: (Buffer Board)	test					X		Plus Test fixture set for Buffer Board
	replace			X			15	A6300 (Use removal tool MTD on Oscillator-Buffer Case Cover)
	align					X		Plus Test fixture set for Buffer Board
	overhaul					X		
MODULATOR, RADIO TRANSMITTER: (Modulator)	test					X	21	Plus Test fixture set for 11.5 mc Modulator
			X				5	
	replace		X				16	A8100
	align					X		Plus Test fixture set for 11.5 mc Modulator
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
RT-524/VRC (continued)								
CONTROL, ELECTRICAL FREQUENCY: (Transmitter Phase Discriminator)	test					X	21	Plus Test fixture set for Phase Discriminator
			X				5	
	replace		X				16	A8200
	align					X		Plus Test fixture set for Phase Discriminator
	overhaul					X		
AMPLIFIER, INTERMEDIATE FREQUENCY: (Transmitter First and Second IF)	test					X	21	Plus Test fixture set for 1st and 2nd IF
			X				5	
	replace		X				16	A8300
	align					X		Plus Test fixture set for 1st and 2nd IF
	overhaul					X		
CONTROL, ELECTRICAL FREQUENCY; (Transmitter Hunt Generator)	test					X	21	Plus Test fixture set for Hunt Generator
			X				5	
	replace		X				16	A8400
	align					X		Plus Test fixture set for Hunt Generator
	overhaul					X		
AMPLIFIER, AUDIO FREQUENCY: (Speech Amplifier)	test					X	21	Plus Test fixture set for Speech Amplifier
			X				5	
	replace		X				16	A8500
	align					X		Plus Test fixture set for Speech Amplifier
	overhaul					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
RT-524/VRC (continued)								
FILTER, LOW PASS: (Antenna Filter)	test					X		Plus Test fixture set for Antenna Filter
	replace		X				16	FL401
	repair							(Sealed unit - Not repairable)
	align					X		Plus Test fixture set for Antenna Filter
FILTER, LOW PASS	replace			X			15	FL3001
	repair							(Sealed unit - Not repairable)
FILTER, HIGH PASS	replace			X			15	FL3002
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (53 mc)	replace			X			15	FL3003
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS (5.625 mc)	replace			X			15	FL3004, FL3005
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (11.5 mc Crystal Filter-Narrow Band)	replace		X				16	FL4001 (Narrow Band)
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (11.5 mc Crystal Filter-Wide Band)	replace		X				16	FL4001 (Wide Band)
	repair							(Sealed unit - Not repairable)
FILTER, BAND PASS: (11.5 mc Crystal Filter)	replace		X				16	FL4002
	repair							(Sealed unit - Not repairable)

Section XXXXI. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS, RT-524/VRC

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
RT-524/VRC (continued)							
ANALYZER SPECTRUM TS-723/U				†	†	1	
AUDIO OSCILLATOR TS-382/U				†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
METER MODULATION ME-57/U				†	†	4	
MODULE TEST SET		†				5	
MULTIMETER AN/URM-105		†				6	
MULTIMETER, METER ME-26/U			†	†	†	7	
OSCILLOSCOPE AN/USM-50			†	†	†	8	
R.F. SIGNAL GENERATOR AN/URM-25D			†	†	†	9	
R.F. WATTMETER AN/URM-120			†	†	†	10	
SIGNAL GENERATOR SG-297/U			†	†	†	11	(Use AN/URM-48 as interim item)
SIGNAL GENERATOR TS-452/U				†	†	12	
TEST SET, ELECTRON TUBE TV-2/U					†	13	
TEST SET, ELECTRON TUBE TV-7/U		†	†	†		14	
TOOL KIT TK-87/U			†	†	†	15	
TOOL KIT TK-116/G		†				16	
VOLTMETER, METER ME-30/U				†	†	17	
HETERODYNE VOLTMETER, BRUEL AND KJEER MODEL 2005					†	18	(CONUS 5th echelon depot only)
MULTIMETER TS-352/U			†	†	†	19	
TOOL KIT TK-88/U				†	†	20	
MODULE ELEMENT TEST SET					†	21	(For use at LEXINGTON SIGNAL DEPOT)

By Order of Secretary of the Army:

G. H. DECKER,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

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USA Caribbean Sig Agcy (1)
USA Sig Msl Spt Agcy (13)
Sig Fld Maint Shops (3)
USA Corps (3)
JBUSMC (2)
AFSSC (1)
Units org under fol TOE: (2 cy each UNOINDC)

1–7	11–95	17–66
1–17	11–96	17–85
1–57	11–98	17–86
1–107	11–99	29–56
1–127	11–117	39–51
1–137	11–155	39–52
3–267	11–157	55–57
6–100	11–500 (AA–AE,RA–RT) (4)	57
6–101	11–557	57–5
6–300	11–587	
6–301	11–592	
6–401	11–597	
7	17	
7–2	17–2	
7–11	17–22	
7–12	17–25	
7–25	17–26	
7–26	17–45	
8–137	17–46	
11–5	17–51	
11–7	17–52	
11–16	17–55	
11–55	17–56	
11–57	17–65	

NG: State AG (3).
USAR: None.
For explanation of abbreviations used, see AR 320–50.

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